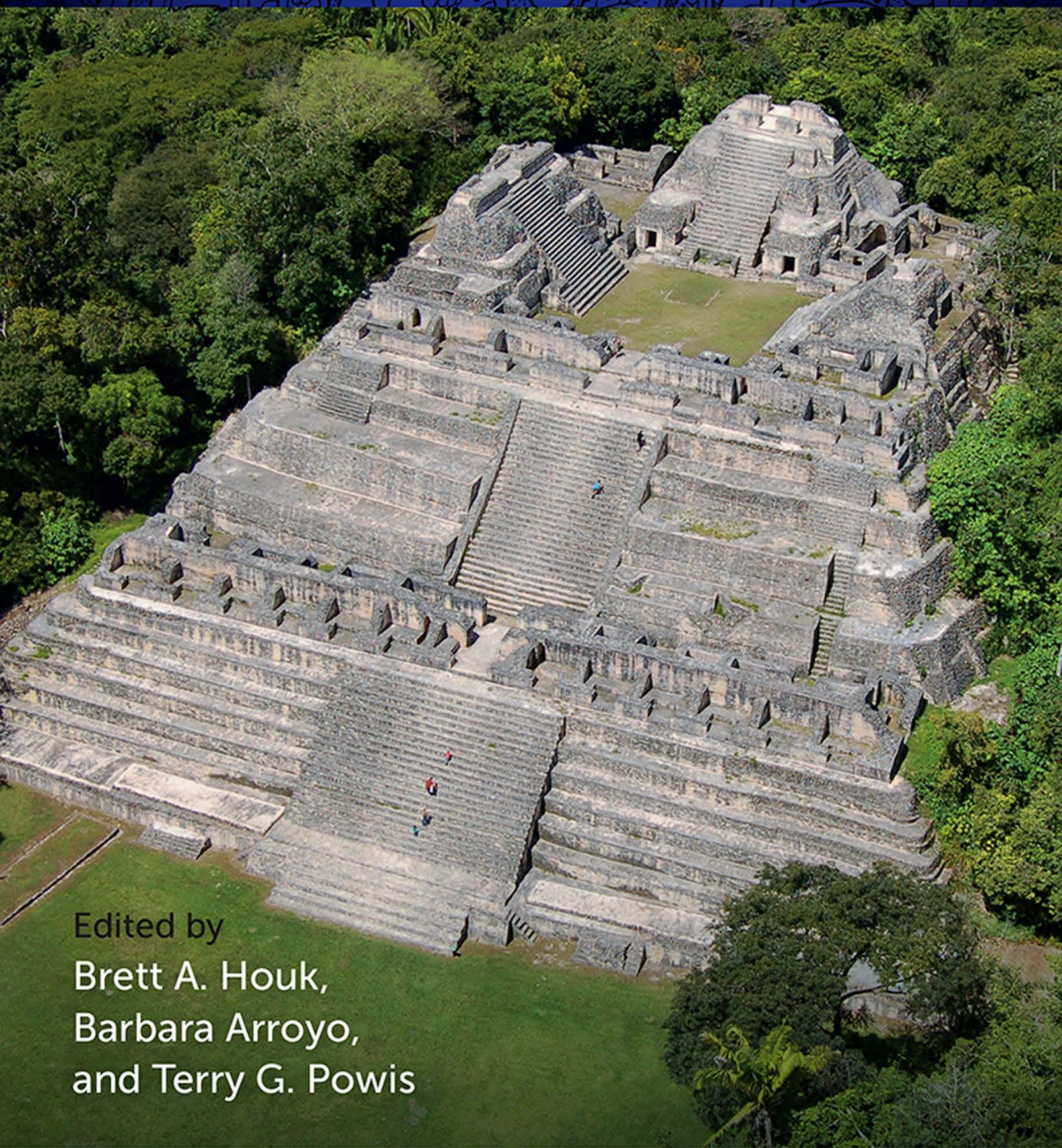
Approaches to MONUMENTAL LANDSCAPES of the Ancient Maya



Edited by
Brett A. Houk,
Barbara Arroyo,
and Terry G. Powis

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EDITED BY
BRETT A. HOUK,
BARBARA ARROYO,
AND TERRY G. POWIS

Foreword by Arlen F. Chase and Diane Z. Chase

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FOREWORD

This volume demonstrates the impact that a large-scale funded program of research can have on a field of study and shows how important the archaeological data that were generated as part of this program are to any overall understanding about the ancient Maya past. Maya archaeology has a long history of involvement with private funders, be they individuals, foundations, or institutions. Without external support of this kind, basic research would suffer. This book presents the results of research funded by the Alphawood Foundation of Chicago to various Maya archaeological projects in Belize and Guatemala from 2009 through 2019. This strong, targeted financial contribution to the field of Maya studies has dramatically advanced our knowledge of the ancient Maya.

One of the earliest external sources of funding for Maya archaeology was not tied to universities, yet it set the stage for all Maya research to come. The Carnegie Institution of Washington became heavily involved in the Maya area thanks to the efforts of Sylvanus G. Morley and Alfred V. Kidder. An aggressive research agenda was set that attempted a broad, sweeping overview of the ancient Maya by focusing on a series of sites. The Carnegie Institution of Washington provided a staff and support for large-scale Maya archaeology projects at Uaxactun (Guatemala), Chichen Itza (Mexico), and Mayapan (Mexico), with smaller projects at Tayasal (Guatemala), Copan (Honduras), and Kaminaljuyu (Guatemala); they also undertook limited work at many other Maya sites and supported an extremely impactful publication program to disburse their results. The Carnegie projects set the basic chronology for the Maya and raised many of the research questions that are still being asked today. Other early research and publication programs supported by philanthropy were carried out by museums and foundations: The University Museum at the University of Pennsylvania; the Middle American Research Institute at Tulane University; the Peabody Museum at Harvard University; and the New World Archaeological Foundation at Brigham Young University. The archaeological work of these institutions

served to amplify our understanding of the ancient Maya but did not have the more overarching agenda of the Carnegie Institution of Washington. All of these institutions usually found donors who supported their archaeological research programs in the Maya area.

With the cessation of World War II, the world changed. The Carnegie Institution of Washington closed its doors to Maya archaeology with the conclusion of the Mayapan Project. At the same time, however, the federal government introduced a funding program for basic research in archaeology through the establishment of the National Science Foundation. In fact, a newly hired Gordon R. Willey at Harvard University received the first National Science Foundation grant given out in the Maya area for research at Barton Ramie, Belize, in 1953. Coincident with the availability of federal funding and the National Science Foundation was the post–World War II GI Bill that promoted university education for returning veterans, meaning that a broader segment of the population had access to a previously rather exclusive field.

In the United States, Maya archaeology became more and more an academic pursuit as the functions of museums changed and as universities became more active in educating a larger segment of society. The field of Maya researchers also changed considerably as this occurred. No longer was Maya archaeology strictly tied to museums or university research foundations. Many of the scholars completing PhDs in Maya archaeology were employed at institutions across the United States and were, of necessity, focused on both publishing and applying for grants in support of their research. Thus, the importance of National Science Foundation funding to Maya archaeology grew over time, especially as it permitted tenure and advancement at an academic institution and was considered to be recognition of excellence. Yet, National Science Foundation funding was exceedingly limited, especially as the number of scholars grew. Thus, other foundations also became a key source of funding; in the past these included, among others: the Ahau Foundation; the Foundation for the Advancement of Mesoamerican Studies, Inc.; the Ford Foundation; the Heinz Family Foundation; and the National Geographic Society. Archaeological field schools, where students paid tuition, fees, or both to participate in and learn from short-term investigations, also became an alternative source of funding. Similar situations existed in other countries.

When economies around the world suffered severe recessions beginning in 2007 and 2008, it became more difficult to find support for long-term basic research in Maya archaeology. Thus, the Alphawood Foundation of

Chicago stepped into support Maya archaeology at a crucial point for the transformation of the field within academia. This support sponsored research at various institutions as well as scholars in different stages in their careers. Because of its focus on important and multiyear basic research, the Alphawood Foundation is literally a godsend for the field of Maya archaeology—as all of the participants in this volume would testify—not only for funding but also as a mechanism for sharing knowledge.

Unlike the twentieth-century context in which funding, research, and in-house publishing were intertwined—as at the Carnegie Institution of Washington, the University Museum, the Peabody Museum, the Middle American Research Institute, or the New World Archaeological Foundation—the publication and presentation of results is now primarily undertaken in conference presentations and edited volumes that enhance knowledge transfer and collaboration across projects. The chapters in this book are an excellent example not only of the work undertaken through Alphawood sponsorship but also of the cross-fertilization and greater impact that results from communication among researchers and projects. We are extremely grateful for the circumstances that brought this volume to fruition and would like to acknowledge, first, the Alphawood Foundation for the decade of funding that made the archaeological research in this book possible; second, the investigators in this volume who continue to advance the field of Maya archaeology; and, third, the University Press of Florida for providing us with a venue in which to publish basic research in the Maya area.

Arlen F. Chase and Diane Z. Chase
Series Editors

PREFACE

Alphawood Foundation's support of Maya archaeological research began in early 2009 with two projects based in Belize and one in Guatemala. As this was our first foray into supporting archaeology, we focused on one region and one civilization. A few more projects were added later that year and in each of the years to follow, steadily increasing to the 16 projects we currently fund. Our entry into the field came at a time when other supporters were discontinuing or decreasing funds or were offering support on a small scale only, a challenge still faced by scientific research today.

Since its inception in 1992, Alphawood has worked for an equitable, just, and humane society by providing funding in several issue areas including advocacy, architecture and preservation, arts, arts education, and the protection of human and civil rights. Our funding to organizations is prioritized around general operations, meaning that it is not tied to specific projects or programs, so organizations are free to use the funds as they see fit to achieve their mission. Our funding is often provided over several years under the philosophy that ongoing support leads to a level of financial stability that allows organizations to take risks, grow, innovate, and do their best work. This philosophy informed our funding of Maya archaeology. In the hope of being able to see more substantial results from long-term research, funding to the researchers has generally been provided for multiple years. This is evidenced by the fact that the three inaugural projects from 2009 have continuously received support over the last 10 years.

What is often most rewarding about my job is the ability to bring organizations or people together from across issue areas to collaborate on like-minded work. In March 2017 the foundation hosted a meeting at Tulane University to bring all current grantees together, some of whom had never met before or had not seen each other in years. Such opportunities to come together and share ideas, debate, discuss, and collaborate allow for progress in ideas and actions. The idea for this volume sprang from discussions at that meeting. This volume is also meant to reflect the impact philanthropy

in general can have on scientific research, particularly when funding is approached as a partnership with the grantee and an investment in the next generation of scholars, exploration, cultural preservation, innovation, public engagement, and local community development. In addition to supporting field research activities, funding has gone to support cutting-edge technology such as the West-Central Belize Lidar Survey in 2013 and most recently cultural preservation through the Crooked Tree Museum and Cultural Heritage Center in Belize, a model of collaboration across multiple entities and an authentic partnership with the local community.

Each year, as I read proposals and reports, I am struck by how the research questions our grantees ask about the past relate to conversations of today: drought conditions, climate change, water management and scarcity, transitioning from egalitarian societies to stratified societies, modifying the environment and landscape, population density and pressures, urban development, wealth disparities, trade and responses to market changes, resource depletion, social changes mediated by subsistence changes and the environment, and maintenance of status and control by elites. This interplay between inquiries about the past and the challenges of the present points to the importance of understanding the human condition, past and present, in order to move forward. The field of archaeology offers not only rigorous scientific research but also the opportunity to connect on the human level and elevate cultures. Each of the researchers in this volume demonstrates a commitment to both through the quality of their field research and their use of new methods and technologies and in the mentoring they do of graduate and undergraduate students from Belize, Guatemala, Mexico, the United States, and other parts of the world. Importantly, they have also engaged in educational outreach to the local schools at their sites, community events like archaeology fairs, community development projects, environmental conservation efforts, and the economic stability that can sometimes be provided to a community by the mere presence of such projects on a consistent basis. Over the years, the Alphawood-supported research has contributed to over 200 journal articles, 100 book chapters, 20 books, 30 theses and dissertations, countless presentations, the discovery of new sites, contributions to museum exhibits, and development projects resulting in access to clean water and economic advancement opportunities for women. We hope through our support that we have been a catalyst for risk-taking in scientific research in areas and in ways that would otherwise remain untested as well as a catalyst for the advancement of an intellectual

community, human curiosity, and opportunity. We believe this kind of support demonstrates how collaboration between funder and grantee can lead to better science, better community engagement, and local development opportunities. The foundation is proud to support the contributions these scholars have made to the field and to their communities.

Kristin Hettich
Alphawood Foundation

1

How the Maya Shaped Their World

MARCELLO A. CANUTO, BRETT A. HOUK, TERRY G. POWIS,
AND BARBARA ARROYO

One of the most important developments in the last several decades in Maya studies has been the appreciation for how thoroughly and comprehensively interconnected was the ancient world of the lowland Maya. Even a few decades ago, the overriding vision of the lowland Maya landscape was one peppered with scores of autonomous small kingdoms crafting separate political histories (de Montmollin 1989; Demarest 1992; Fash 1994; Freidel 1986; Grube 2000; Hammond 1991; Marcus 1993; Sabloff 1986; Sanders 1981; Webster 1997). Such a view did not fully embrace the notion of a heavily constructed, regionally integrated, or continuously curated landscape.

Previous research on landscapes in the Maya area tended to focus on the complex interactions between the natural environment and notions of sacred geography, social memory, and economic organization (Ashmore 2004, 2015; Brady and Ashmore 1999; Dunning et al. 1999; Freidel and Schele 1988a; Hendon 2010; Koontz et al. 2001; Puleston 1977; Schele 2000; Taube 2003, 2004, 2013). These approaches were especially focused on the humanistic phenomenological quest to understand how the ancient Maya understood their own landscape, to reconstruct the nature of ancient cosmovision (Ashmore 2015:310) based on both emic ideology (native notions of cosmology) as well as etic pragmatism (least-cost paths, viewsheds, and ecological viability). Importantly, however, these approaches contributed to the demise of the structuralist paradigm claiming an inherent distinction between pristine and built landscapes (Ashmore 2015:307). That is, no landscape was devoid of social meaning: all were "already constructed" spaces even if not literally built.

These nuances allowed research to see landscapes as fields of inequality, complexity, integration. In fact, this collection of chapters approaches the

idea of landscape not just as the sum total of how a settlement's local environs were plied and manipulated to conform to their deep-seated and normative notions of sacred geography but also takes note of how the lowland Maya actively constructed landscapes of power, meaning, and exchange that rendered their social worlds imbricated, interdependent, and complex.

Approaches to Monumental Landscapes

The editors of this volume asked each author, all Alphawood Foundation grantees, for a chapter that explores *how* his or her research conceives of monumentality and landscapes very broadly. In other words, we did not say to the authors, "This is what *monumental* means, and this is what *landscape* means," but instead we asked the authors "what does *monumental landscape* mean to you in the context of your research into the ancient Maya?" The result of asking that question is, we think, a much more interesting set of answers and chapters than would have resulted from establishing defined limits on the terms.

The collected chapters offer interpretations and perspectives of landscape importance in various regions in the Maya area including the central Maya lowlands, Belize, and the northern and central Maya highlands (Figure 1.1) with studies spanning over 10,000 years of human occupation in the region (Table 1.1). Taking their cues from a robust scholarship on landscape archaeology, urban planning, political history, and settlement pattern studies in Maya research, the authors in this volume explore conceptions of monumentality and landscapes that are the products of long-term research and varied research agendas. We have grouped the chapters in three broad conceptual categories based on the primary approach to the topic chosen by each chapter's author(s): natural and built landscapes, political and economic landscapes, and ritual and sacred landscapes. As discussed below, these divisions are simply one way of organizing the chapters in this volume. We could just as easily have placed several of our chapters into another category, but we felt that the structure presented here best groups similar chapters and approaches.

In all cases, the chapters focus on the monumentality, construed in different ways and at difference scales, of the ancient Maya intervention, modification, perceptions, and construction of these landscapes. In this way, these studies help advance the notion that approaching the built environment through the lenses of monumentality and landscape provides the necessary scales of analyses to explain not just basic ideational concepts of

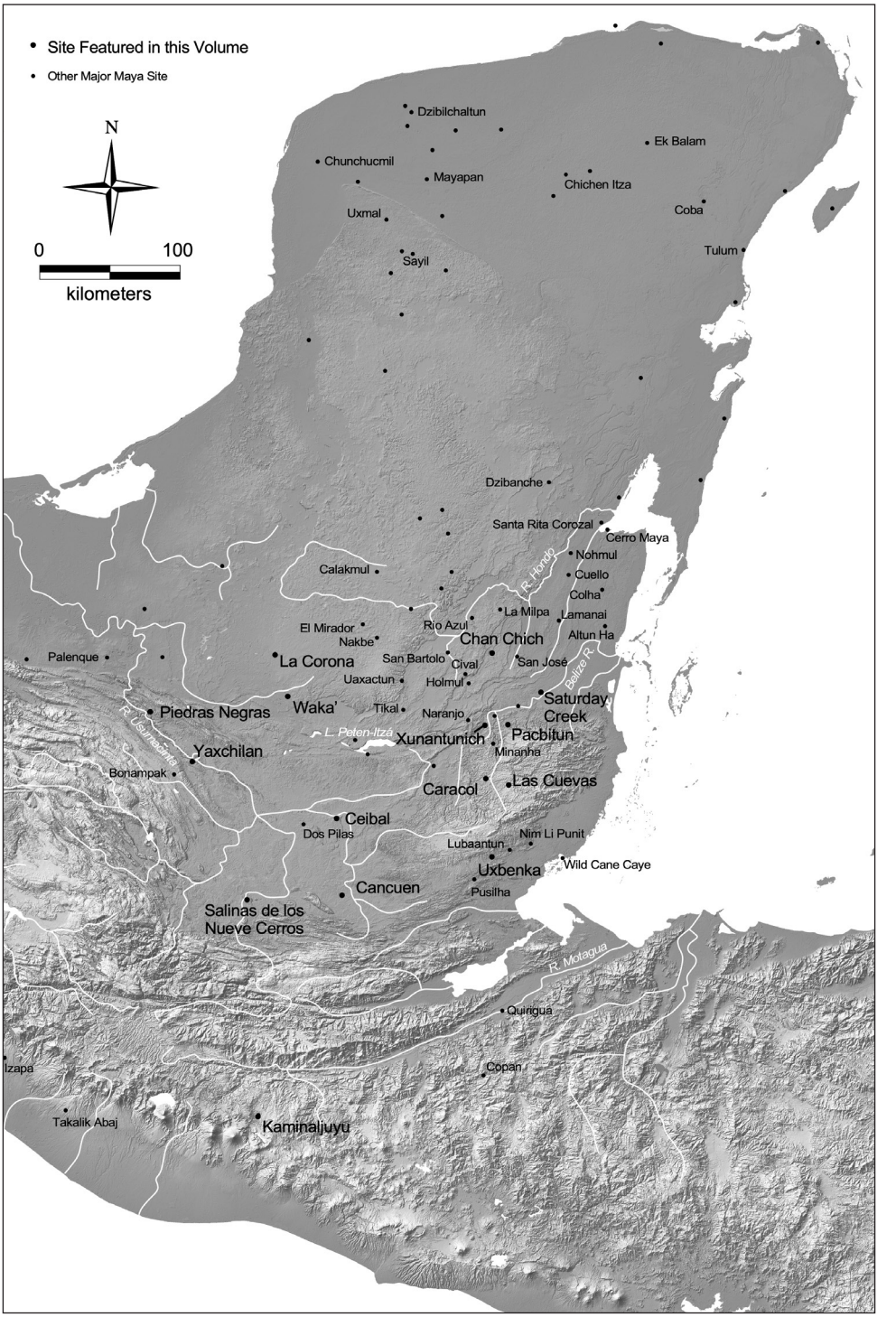

Figure 1.1. Map of the Maya area showing sites discussed in this volume and selected other major sites. Base map courtesy of NASA JPL, SRTM mission.

Table 1.1. General chronology for the Maya area

Period	Dates
Historic/Colonial	1520–1920 CE
Postclassic	900/1000–1520 CE
Terminal Classic	810–900/1000 CE
Late Classic	550/600–810 CE
Early Classic	250–550/600 CE
Terminal Preclassic	100–250 CE
Late Preclassic	350 BCE–100 CE
Middle Preclassic	1000–350 BCE
Early Preclassic	2000–1000 BCE
Late Archaic	5000 (??)–2000 BCE
Early Archaic	8000–5000 (??) BCE
Paleoamerican	12,000–8000 BCE

ancient Maya society but also accurately model the regionally integrated lowland Maya society. As this chapter's title aptly implies, the idea that the ancient Maya "built their world" connotes notions of an active and sustained social, economic, and political interdependence that scholarship is now revealing.

Natural and Built Landscapes

Natural and built landscapes have been a central theme in Maya studies. This volume presents a spectrum of papers that offer information on both types of landscapes and how the ancient Maya integrated and organized their world around their geographic setting. Natural landscape represents particular habitats such as mountains, caves, and lakes that have not been impacted by humans but nonetheless can be perceived as monumental as they relate to the ecology of a particular geographic space. The natural landscape played an important role in Maya society as it affected choices for where to settle and construct sites and was integrated into sites' layouts, built spaces, and orientations. Natural landscape also had implications for the economic, political, social, and ideational aspects of Maya society (Ashmore 2015). Some natural landscapes were integrated into monumental centers as representing the society's cosmology.

Built landscapes represent human action in the planning and construction of particular spaces to fulfill the needs of a particular group. The actions invested in built landscapes can be monumental, involving large amounts of labor required to exploit particular resources for leveling large

areas prior to construction, the construction of buildings and plazas, and the transportation of construction materials.

Chapter 2, by Keith Prufer and Douglas Kennett, focuses on the long history of human occupation in southern Belize, from initial colonization at the end of the Pleistocene through to the present. First occupied by Paleoindians, the landscape of southern Belize has seen 10 millennia of cultural modifications. The authors, drawing on more than two decades of archaeological research, discuss why studying the long historical trajectories of settlements within a region can provide data about how humans adapt and reorganize over long periods of time and provide insights into underlying processes of resilience and reorganization in response to climatic, demographic, and social pressures. Many regions of the Maya area have yet to produce such long histories of cultural data spanning 10,000 years, so the information from southern Belize is crucial to our understanding of cultural (behavioral) adaptations to the natural landscape. As a consequence, Prufer and Kennett are able, for example, to track the transition from foraging to plant cultivation to agriculture and from mobile hunter-gatherers to the rise of the earliest sedentary villages (and emergence of political leaders) to the construction of cities (and development of divine kingship) to the modern occupation of the region. While the Classic period witnessed the greatest investment by people into the built environment as residents of Uxbenka and other centers became involved in monumental landscape alteration, the chapter's examination of historic and modern resettlement of southern Belize demonstrates how ancient large-scale alterations to the landscape still resonate in the placement of modern roads and towns.

Chapter 3, presented by Brent Woodfill and Marc Wolf, introduces Salinas de los Nueve Cerros, a site located at the highland–lowland nexus in western Guatemala, best known as the largest of the ancient Maya saltworks in the southern lowlands. The site's natural and constructed monumental landscape defined not only the city's layout but also its economy and political structure. The most obvious of the saltworks were the brine stream and salt flats, but the salt industry changed the landscape in other ways—it was fueled by fires that needed a constant supply of firewood and allowed for the large-scale production of other commodities including dried, salted fish, which were harvested in large quantities from the Chixoy River and associated streams and oxbow lakes. All of these resources appear to have been tightly controlled by the local elite, who marked their presence with large administrative and public ritual structures.

In Chapter 4, Melissa Burham and colleagues examine urban growth, monumentality, and local community formation during the Late Preclassic period at Ceibal, Guatemala. Rather than focusing on the monumental epicenter of the site, the authors turn to the small communities that grew around the site core, each anchored by a minor-temple complex. Although smaller than temples in the site core, these community temples nonetheless represent monumental constructions that required considerable communal effort to build and maintain over an ever-expanding area. In this way, Burham and her coauthors consider how scale informs the definition of monumentality, much the same way that Terry Powis and colleagues do in Chapter 13.

Although we have included this Ceibal chapter in the first section of this volume, which focuses on natural and constructed landscapes, we could have placed it the third section along with the other chapters examining sacred landscapes because the authors focus on the importance of ritual in fostering local identities. The construction of these minor temples, which served as focal nodes for these communities (see Hutson 2016), represents part of the gradual urbanization of Ceibal, which the authors propose was a generative process driven by bottom-up forces, not a central authority. Chapter 4 draws together various lines of evidence, including excavation and mapping data from Harvard's previous work at the site—particularly Gair Tourtellot's (1988) investigations—and newer data from the current project, to spatially define communities and examine the role of minor temples and ritual in fostering local group identities. The importance of these minor temples is reflected in the way community members carefully and reverentially terminated them prior to abandoning the site at the end of the Terminal Preclassic period.

In Chapter 5, Eleanor Harrison-Buck and colleagues describe their use of drones to quickly and economically map roughly 7 km^2 of plowed fields at the site of Saturday Creek in the middle Belize River valley. They argue that Saturday Creek was a central node on the landscape from Preclassic to colonial times, serving as an important crossroads between east–west and north–south transportation routes. The authors consider the dense settlement around the site core of Saturday Creek to be part of a larger monumental landscape and consider activities taking place in the vacant terrain on the fringes of the peri-urban settlement—what they refer to as the "heterotopia" (borrowing from Foucault). These spaces were separate from the settlement but integral to its operation and included environments such as the pine ridge that served as an important transportation corridor, vast

tracts of wetlands with ditched and drained agricultural fields, and broad floodplains with rich alluvial soils, which were likely places of cacao cultivation. The authors conclude that these "heterotopian" spaces in the monumental landscape are important to consider in settlement studies because they played a vital role in maintaining long-term, dense populations in urban and peri-urban centers like Saturday Creek.

Political and Economic Landscapes

The chapters in the second section of the volume explore political and economic landscapes at various scales: epicentral examinations of Kaminaljuyu, Guatemala, and Chan Chich, Belize; the heavily and extensively modified landscape of Caracol's large polity; regional landscapes of the Usumacinta River valley encompassing multiple polities; and the geopolitical and economic landscape of the Kaanul kingdom as experienced at La Corona, Waka', and Cancuen in Guatemala. The approaches the authors take and the questions they are trying to answer span equally varied spectra but build on decades of inquiry that has tried to explain the fundamental nature of the "lowland Maya polity" during the Classic period (for summaries, see Adams and Jones 1981; Culbert 1991; Foias 2013; Gillespie 2000; Houk 2015; Houston, Escobedo, Child, et al. 2003; Iannone and Morris 2009; Inomata and Houston 2001; Lucero 1999a; Marcus 1993; Martin and Grube 1995; Sanders 1989; Sharer and Golden 2004).

In simple terms, the debate has centered on models that promote the idea that the Classic Maya political landscape was characterized by small decentralized political units or by large centralized territorial states (Chase and Chase 1996; Foias 2013:59–62; Fox et al. 1996; Iannone 2009). Along this spectrum, a series of distinct models has been proposed, such as segmentary states (Ball and Taschek 1991; Fox et al. 1996; Houston 1997), city-states (Grube 2000; Hammond 1991), galactic polities (Demarest 1992), feudal states (Adams and Smith 1981), regional states (Braswell et al. 2004), and centralized states (Chase and Chase 1996), to describe particular polities. This variation manifests the "protean nature of Maya social and political formations" (Demarest 1996:821), meaning that the Classic Maya body politic was a complex phenomenon that achieved integration through multiple and concurrent strategies of organization that varied in relevance and through time (Marcus 2003). The economy operated alongside politics among the ancient Maya, and many of the political maneuvers of the Classic period masked economic agendas, such as control of an important trade route or resource procurement area.

The second section of the volume opens with a chapter by Diane Chase and colleagues that examines one of the largest Classic period Maya sites that ever existed: Caracol, Belize. Using over 30 years of data from the site, the authors examine four components of Caracol's monumental landscape: the site's plazuela groups, its causeway system, its reservoir system, and its agricultural terraces. Extensive excavation, mapping, and lidar data demonstrate that Caracol's expansive territory—covering over 200 km^2—was a heavily modified landscape, with considerable evidence for centralized planning. Mapped onto this planned landscape at Caracol is evidence for economic integration and centrally directed social engineering in the form of "symbolic egalitarianism." As large and populous as Caracol was, it is not surprising that the city's rulers extended their influence beyond the kingdom's immediate territory and onto the larger geopolitical landscape of the Late Classic period. As Marcello Canuto and Tomás Barrientos Q. do in Chapter 9, and as Olivia Navarro-Farr and colleagues do in Chapter 10, Chase and colleagues broaden the concept of monumentality to consider strategic political nodes on the landscape and interpolity interactions on a truly regional scale. Ultimately, Caracol fell into decline after centuries of political, social, and economic success, and the authors close their chapter with a consideration of the roles of human decision-making and climate change in the final abandonment of the kingdom.

In Chapter 7 Barbara Arroyo and Lucia Henderson introduce the monumental works of Kaminaljuyu, a site located in the Valley of Guatemala, occupying a strategic position that connected several important cultural regions, including the Pacific coast, the northern highlands, and the Maya lowlands. In this chapter, the authors outline a new understanding of the complex, multifaceted, and monumental hydraulic landscape of Kaminaljuyu. They argue that previous assumptions related to the footprint and timeline of Lake Miraflores, the body of water around which the site's first occupants originally settled, need to be reassessed. They also expand the site's monumental hydraulic landscape to consider the massive, snaking "Montículo de la Culebra" aqueduct, which served to fill Lake Miraflores with water from the nearby Río Pinula. Last, in addition to the system of agricultural canals that brought lake water to the site's southern sector, they describe a recently discovered system of ritualized waterways that channeled water through the site's civic center, transforming the civic landscape into a complex network of artificial rivers, ponds, and lagoons. The enduring importance of water at Kaminaljuyu, in both practical and ideological terms, is encountered in royal tombs, in sculptural art, and, above all, in the

continued emphasis on physically channeling, storing, and managing water throughout the lifetime of the site.

Also approaching monumentality and politics at an epicentral-scale, Brett Houk and Ashley Booher use a site-planning approach in Chapter 8 to argue that the Late Classic rulers of Chan Chich, Belize, designed major architectural components of the site to function as the theater for public spectacles and processions. The authors demonstrate evidence for rituals' having taken place along the two causeways and at their termini structures as well as an apparent functional relationship between one causeway and an associated courtyard. Ritual, in this case, was actually the means to a political end, hence the inclusion of this chapter in the section of this book examining political landscapes. As Houk and Booher show, converting the monumental landscape of Chan Chich into a vast stage for public spectacle and ritual processions required considerable planning, labor, and resources. Intellectually and methodologically, the chapter builds off earlier work by Takeshi Inomata (2006a:818), who suggests "securing sufficient spaces for public events was a primary concern in the design of Maya cities." The Late Classic rulers at Chan Chich and other sites spent vast resources on the architecture of political theater as an exercise in community building and regional competition for labor, loyalty, and prestige.

Chapter 9 is one of three chapters in this section that explores the political and economic landscape of the Late Classic Kaanul kingdom. Marcello Canuto and Tomás Barrientos Q. consider the role of secondary centers in the geopolitical landscape of the lowlands during the Late Classic period, using La Corona, Guatemala, as a case study. Their work addresses a gap in the debate over the nature of Maya polities. Most of the models described above derive from the study of large sites because they are considered as microcosms of the polities for which they are the capitals (Foias 2013:72; A. Smith 2003). As a result, "secondary sites" have not been central to this discussion, discouraging the very notion of an integrated geopolitical landscape in the Maya lowlands.

Most recently, the identification of emblem glyphs as markers of political independence has provided an emic view of ancient lowland Maya political organization. Among these, the emblem glyph identified with a serpent head (*kaan*) is the one that is the most frequently mentioned in the inscriptions. The epigraphically attested regional ubiquity of the Kaanul kingdom occasioned scholars to refer to it as a "superstate" (Grube 2004; Martin 2000; Martin and Grube 1995). As its political influence expanded throughout the Maya lowlands, using La Corona as a linchpin along a north–south

communication route (Canuto and Barrientos Q. 2011, 2013; Canuto et al. 2014), it reached as far south as Cancuen and perhaps even Quirigua (Martin and Grube 2008). In Chapter 9, Canuto and Barrientos Q. demonstrate that the relationship between the Kaanul hegemony and La Corona was much more complicated than simple political alliance. Kaanul's complex interaction with its secondary center reveals some of the tools it used to create a monumental political landscape, including, in the case of La Corona, manipulating the local power structure, the community's social organization, and even its sacred history.

In Chapter 10, Olivia Navarro-Farr and colleagues explore another example of how the Snake kings manipulated the political landscape of the Classic period with a fascinating case study in ancient Maya queenship at Waka'. Occupying a strategically important spot where a likely north–south land route intersects with a riverine network, Waka' was first embroiled the geopolitics of the lowlands during the Teotihuacan *entrada* of AD 378, after which the kingdom was apparently incorporated into the New Order's political network based at Tikal. Kaanul subsequently brought Waka' into its hegemony near the end of the Early Classic period with the marriage of the first of at least three royal Kaanul women to kings of Waka'. Beyond simply telling this story, Chapter 10 explores monumentality in two ways. First, Waka' is presented as a contested node on the vast political and economic network of the Classic period, its importance evident in its role in the *entrada*, the deliberate and long-term strategy to integrate it into the Kaanul hegemony through royal marriage, and Tikal's Late Classic star war conquest of Waka' in AD 743. Second, Navarro-Farr and colleagues examine how, through reverential manipulation of monumental sculpture and architecture, the occupants of Waka' continued to honor the great Kaanul queens for over a century following the failure of institutional kingship at the city. In particular, Chapter 10 explores the homage paid to Kaloomte' K'abel through repeated offerings made to and at her monumental structure, M13-1.

In Chapter 11, Charles Golden and Andrew Sherer discuss how the political and economic landscapes in the western lowlands impacted the monumental landscape of the Late Classic and Terminal Classic periods along the Usumacinta River. It is against this topographical/geographical backdrop that the politics practiced by Maya rulers at the sites of Palenque, Piedras Negras, Tonina, and Yaxchilan impacted the function and flow of goods and people across the region. Drawing on epigraphic research, excavation results, ground survey, and remotely sensed data gathered during

15 field seasons of regional survey, this chapter emphasizes the major role that the physical landscape of the Usumacinta River basin played on the nature, extent, and structure of relationships between these major kingdoms.

Charles Golden and Andrew Sherer emphasize the movement of people and goods in their chapter. Movement was affected by friction resulting from the physicality and political dynamics of the landscape. It is this friction—and attempts to increase or reduce it through warfare and marriage alliances—that shaped travel and trade during the Classic period and, in turn, was crafted in stone at Piedras Negras and Yaxchilan. The authors present several potent, exemplary cases of monuments and architecture that worked together to represent and map movement and friction and, in so doing, acted as tools intended to craft experience and understandings of landscapes. For the authors, the representations of lords and ladies, allies and captives, carved on lintels, stairs, and stelae at Piedras Negras and Yaxchilan are truly monumental landscapes.

In Chapter 13, Arthur Demarest and collaborators present evidence from the southwestern frontier Classic Maya port city of Cancuen that can help explain the nature of the southern lowland economic decline by contrasting it with Cancuen's late-eighth-century economic transformations and meteoric florescence; while other western Petén dynasties disintegrated, Cancuen flourished. One element of this apogee was the creation of new forms of monumental and ritual settings to recruit and maintain non-Maya economic exchange partners. This "innovation network" came to control critical routes and resources leading to changes in management, production, and economic power. However, as with many high-risk "innovation partnership networks," success was truncated by abrupt network failure. Evaluation of this phenomenon by economists provides insights into ancient Maya economy and the role of monumentality in both its legitimation and transformation.

Ritual/Sacred Landscapes

The third section of the volume examines ritual and sacred landscapes and includes three different case studies from Belize. As with the other two sections, this one encompasses an equally broad topic. However, rather than focusing on ceremonial landscapes—those defined "as settings in which arrangements of specific features situate the cosmos on earth, and where ritualized movements to and among these features are means to evoke and reinforce understandings of cosmic order" (Ashmore 2008:199) or even on site-level microcosms (Ashmore 1991; Ashmore and Sabloff 2002), the three

case studies in the third section examine the role of ceremonial architecture in the development of social and political complexity and the maintenance of political power.

Terry Powis and his colleagues have gathered significant information about the Middle Preclassic period at Pacbitun, data that speak to the broader subject of architectural monumentality. In Chapter 13, they present two specific case studies pertaining to Pacbitun's Plaza A architecture. In the first case study, the authors' discussion begins with the low residential/workshop platforms of Plaza B, an area well-recognized for its marine shell bead craft production, and the naturally elevated area to the east of Plaza B, where the large ceremonial structure of El Quemado was built on the highest point that would later become Plaza A. Unlike any structure previously built at Pacbitun, the presence of El Quemado implies an ability to organize a significant labor force and perhaps marks the beginning of institutionalized inequality. The sheer size of the platform clearly exceeded labor, energy, and resource requirements when compared to the contemporary structures in Plaza B. An apparent termination event in the form of chopped corners, extensive burning, and subsequent burial marks an important transition in the organization and ideology of Pacbitun's society at the onset of the Late Preclassic period.

Plaza A, a monumental construction in and of itself, served not to just entomb El Quemado but eventually acted as the foundation for Pacbitun's Late Preclassic E-Group complex, an archetype spreading throughout the southern Maya lowlands during the Late Preclassic (see Freidel et al. 2017). The assemblage's continued Classic period sociopolitical importance evinced in the grand architectural modifications and its eventual use as a shrine for ancestor veneration supports its monumental status. Succinctly, the case studies in this chapter demonstrate that monumentality refers to more than architectural scale. The labor force, energy, and resources needed to construct El Quemado and the E-Group would have greatly surpassed what was needed to build contemporary domestic structures.

In Chapter 14, Kathryn Brown and Jason Yaeger discuss the sociopolitical organization of several key sites in the Mopan Valley from the early Middle Preclassic through the end of the Late Classic period. Through an examination of monumental architecture, public art, and ritual practices, the authors describe the political development over this 1,600-year period beginning with Early Xunantunich, the first major political center beginning in the early Middle Preclassic, to the latest, Classic Xunantunich, which was abandoned in the ninth century. The centers of Actuncan and

Buenavista filled a vacuum in the valley in the intervening centuries, playing major roles on the political landscape during the Late Preclassic and Early Classic periods, respectively. The authors trace how political authority and ideology became more centralized and the institutions of divine kingship developed as each center succeeded one another.

At Early Xunantunich, the earliest monumental constructions emphasized natural features such as hills and caves. During the Middle Preclassic, these natural features became regarded as sacred landscapes. By the Classic period, specifically observed at Buenavista and Classic Xunantunich, the focus on sacred landscapes transitioned from natural features to monumental buildings (e.g., ball courts and E-Groups).

It is clear from the data presented in this chapter that monumental constructions are at the forefront of our understanding of the development of the political landscape in the Mopan Valley, a landscape where ritual and religion played key roles in the rise of complexity. This valley represents a microcosm of what was occurring throughout the lowlands from the Middle Preclassic onward.

The third case study from Belize focuses on an important cultural landscape feature: cave sites. In Chapter 15, Holley Moyes interprets ancient Maya cave sites as ritual venues that instantiated Maya cosmology, providing archaeologists with an unambiguous context for understanding the ritual life of ancient Maya people. Cave archaeologists strive to understand how and when these sites were used, who used them, and how. As sacred spaces, caves could be manipulated in political contests for the acquisition and maintenance of power. Space is a consideration in cave studies, but there has been little discussion of caves as built environments. In this chapter Moyes discusses the structure of caves in Belize and outlines an analytical approach for relating structure to social process. Providing a case study from the cave at Las Cuevas, she argues that architectural elements evidence large-scale collective action during the tumultuous Late Classic period.

Conclusion

As the chapter summaries we have presented here indicate, there is a great deal of interdigitation of subthemes relative to the larger treatment of landscape modification. For instance, the effort by Brown and Yaeger on Xunantunich also heavily refers to political and economic landscapes, while Houk and Booher's study of the design of Chan Chich as a stage for political

theater and public ritual relates to ritual landscapes. This overlapping of themes reflects the complex and interrelated nature of ancient Maya politics, ritual, and worldview, all of which we find through our archaeological research mapped onto the natural and built environment of the Maya world.

In Chapter 16, Arlen Chase and Diane Chase reflect on this complexity and the topic of monumental landscapes of the ancient Maya. They return to some of themes of this introductory chapter and consider the myriad ways in which the word "monumental" is aptly applied to describe the landscapes of the Maya world. Although the obvious towering temples and palaces of the Classic cities first and foremost come to mind when thinking of monumentality among the ancient Maya, Chase and Chase remind us that much of the monumental character of ancient Maya landscapes is represented by the horizontal transformation of the built environment. From removing soil, to carving bedrock, to expanding plazas through infilling, to constructing massive causeways, much of the monumentality of Maya cities represents building out rather than up. Beyond that, other landscape features such as boundary walls, ditches, and extensive agricultural modifications represent other visible reminders that the Maya heavily altered the natural environment to a remarkable degree. Importantly, the authors also remind us that the ancient Maya, through their worldview, considered their landscape to be monumental and complex, involving layered worlds with earthly transitions points between realms represented by caves and lakes and manmade, symbolic access points represented by temple doorways, the opening into an allegorical mountain or *witz*.

The concluding chapter explores monumentality through time, the role that remote sensing techniques like lidar are playing in changing our understanding of how extensively the Maya modified their landscapes, the degree to which city planning contributed to those changes, and how the character of monumentality changed during the Postclassic period, following the Classic Maya collapse. This big-picture, deep-time view of the Maya world reaffirms the approaches and conclusions of the individual case studies in this volume—monumentality pervades ancient Maya landscapes, physically, conceptually, and symbolically.

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2

The Holocene Occupations of Southern Belize

KEITH M. PRUFER AND DOUGLAS J. KENNETT

This chapter discusses the history of human occupations in southern Belize over the last 13,000 years (see Table 1.1). It is a story that suggests humans have been active agents on this landscape almost continuously throughout the Holocene, likely dating back to the initial colonization of the New World. The first Mesoamericans arrived in the region 10 millennia prior to the development of urban populations and set into motion cultural adaptations and environmental impacts that continue today. Drawing on more than two decades of archaeological research in southern Belize, this chapter links changing natural and constructed landscapes to cultural developments and climate variability beginning with Paleoamerican colonists and continuing to the present. Behaviors originating in the Preceramic period became further amplified as agricultural communities coalesced into states and emergent rulers drew on already long-established human–landscape relationships to legitimize their status. The collapse of regional polities in the tenth century CE brought with it demographic changes, as did the arrival of Europeans, with clear evidence of rebounds after each decline. More recent developments in the region show a revitalized and highly contested focus on land and represent the most recent cycle of adaptation to what has always been an important cultural landscape.

Environmental Context of Southern Belize

Southern Belize is a geographically distinct region in Central America with a diverse set of geological and biotic resources that have facilitated a history of human occupation (Figure 2.1). Physically, the region is circumscribed by the Maya Mountains to the west, a series of swampy *bajos* to the south

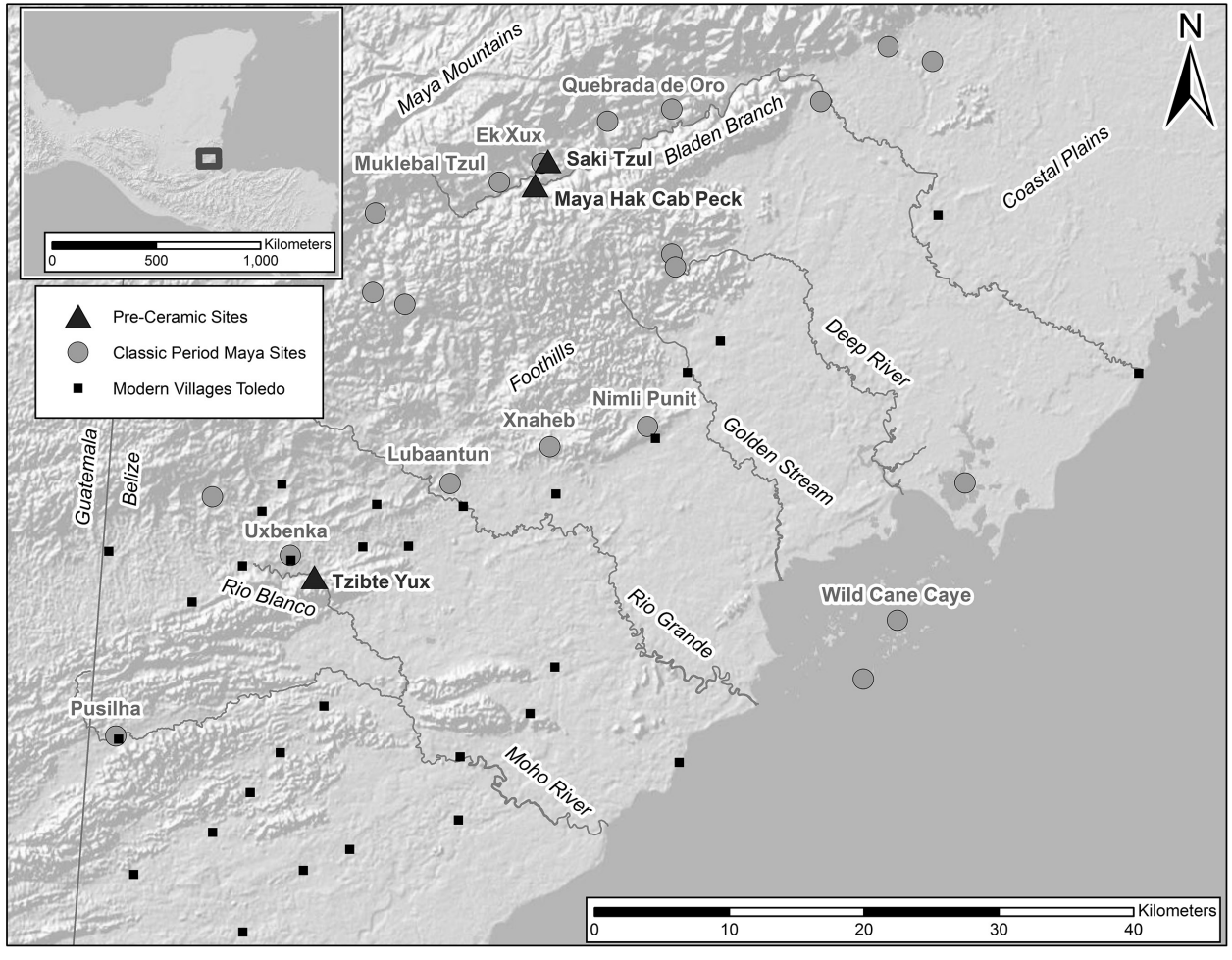

Figure 2.1. Map showing topographic features in southern Belize as well as archaeological sites (Preceramic and Classic period Maya) discussed in this chapter as well as the distribution of modern villages across the landscape. Map by Amy E. Thompson for the Bladen Paleoindian and Archaic Archaeological Project.

along the Temash and Moho Rivers, the Caribbean Sea to the east, and inhospitable pine barrens to the north. It is one of the wettest places in the Americas, receiving over 4,000 mm of rainfall annually, more than double the precipitation of central Petén and seven times as much as the northern Yucatan Peninsula (Douglas et al. 2015). It is also a seasonal desert (Haug et al. 2003) where, for several months each year, there is little to no rainfall and evaporation exceeds precipitation.

Geologically, the region is complex. The central topographic feature, the Maya Mountains, was formed by Devonian subaerial volcanics characterized by lava flows and pyroclastic and volcanoclastic activity, some locally altered hydrothermally, and by the Pennsylvanian-Permian Santa Rosa Group of argillaceous and arenaceous sediments and carbonates. The eastern slope is aproned by Tertiary and Cretaceous limestones of the Cobán Formation (Petersen et al. 2012). Combined with high precipitation during the Quaternary, the result is a hydrologically carved network of caves and cockpit karst overlaying earlier volcanics. This rugged landscape has been central to the lives of all people who have lived in the Maya Mountains. The interior valleys, where people lived, have a unique geological history compared to the rest of the Maya Lowlands. The upper reaches of tributaries contain volcanic and metamorphic float eroding off the spine of the mountains, and soil pedogenesis in the alluvial valleys incorporates carbonate and volcanic materials. The valleys form a rich agricultural landscape surrounded by near vertical mountains and host diverse biotic communities and economic resources (Dunham and Prufer 1998).

The foothills region, which was home to many of the Classic period centers as well as most of the modern Maya-speaking agricultural villages, also has an unusual geological history. Known as the Toledo Formation (or the Toledo Uplands), these rolling hills are composed of Late Cretaceous–Early Tertiary turbidite conglomerates with interbedded sandstones, mudstones, volcanics, and volcanoclastics, with sediments likely originating from the Cuban volcanic arc migration (Cornec 1986). In some portions of the Toledo Formation, hilltops, particularly near several major Classic period centers (Uxbenka, Lubaantun, and Nimli Punit), are dominated by soft interbedded sandstone and mudstone bedrock exposed through weathering and human-mediated agricultural clearing. When cleared of vegetation as part of an agricultural cycle, pedogenesis is rapid, with calcareous sandstone and mudstone breaking down rapidly as it is exposed to temperature and moisture differentials and rootlet activity (Culleton 2012). The result is an almost renewable source of high-quality soils for farming, and there is

little need to engage in landscape intensification techniques like terracing to conserve soils (Prufer et al. 2015).

Interspersed across this hilly landscape are massive karst ridges rising over 250 m above the Toledo Formation. These limestone remnants are Late Tertiary–Early Cretaceous La Cumbre carbonate megabreccias (Cornec 1986), possibly formed during the collapse of the platform paleoscarp immediately following the K-T boundary Chicxulub impact event (Bralower et al. 1998). The coastline and pine forest to the north are Quaternary in age and composed of chert/quartz terraces as well as alluvial river terraces and sandbars. Pleistocene and Holocene karstification of the Cretaceous-Tertiary limestones have produced some of the key features used by humans as they colonized and modified these landscapes in southern Belize. These include the rockshelters occupied during the Paleoamerican and Archaic periods and the incredible subterranean cave landscape that formed a key component of the Mesoamerican worldview (Prufer and Brady, eds. 2005).

Rainfall distribution and seasonality controls are dominated by the annual migration of the intertropical convergence zone (ITCZ) with marked meridional contrast. Southern Belize receives considerable rainfall each year, often in excess of 4,000 mm. Mean annual temperature is approximately 26 degrees Celsius. During the winter dry season (February–May) evapotranspiration frequently exceeds precipitation. Given its location relative to the equator, near the northern margin of the annual ITCZ migration, southern Belize is sensitive to even small variations in the mean position of the ITCZ and its rainfall distribution (Lechleitner et al. 2017; Ridley et al. 2015). Other climate modulators that play significant roles in the precipitation variability of the region include changes in the strength of atmospheric pressure in the North Atlantic (North Atlantic high) and variability in El Niño–Southern Oscillation (ENSO). High sea-level pressure (SLP) in the North Atlantic leads to stronger trade winds, resulting in cooler than normal sea-surface temperatures (SST) and reduced Caribbean basin precipitation that has decadal scale variability through the North Atlantic Oscillation (Proctor et al. 2000; Lechleitner et al. 2017; Smirnov et al. 2017). At shorter timescales, ENSO exerts strong interannual precipitation variability in the Central American tropics, establishing a zonal seesaw SLP and SST pattern across the eastern Pacific and western Atlantic region. The result is that during ENSO+ (lower SLP and higher SST) periods, it is often dryer and warmer along the Caribbean coastline during the rainy season (Zhu et al. 2012).

There are a diversity of paleoclimate records for Mesoamerica (Douglas,

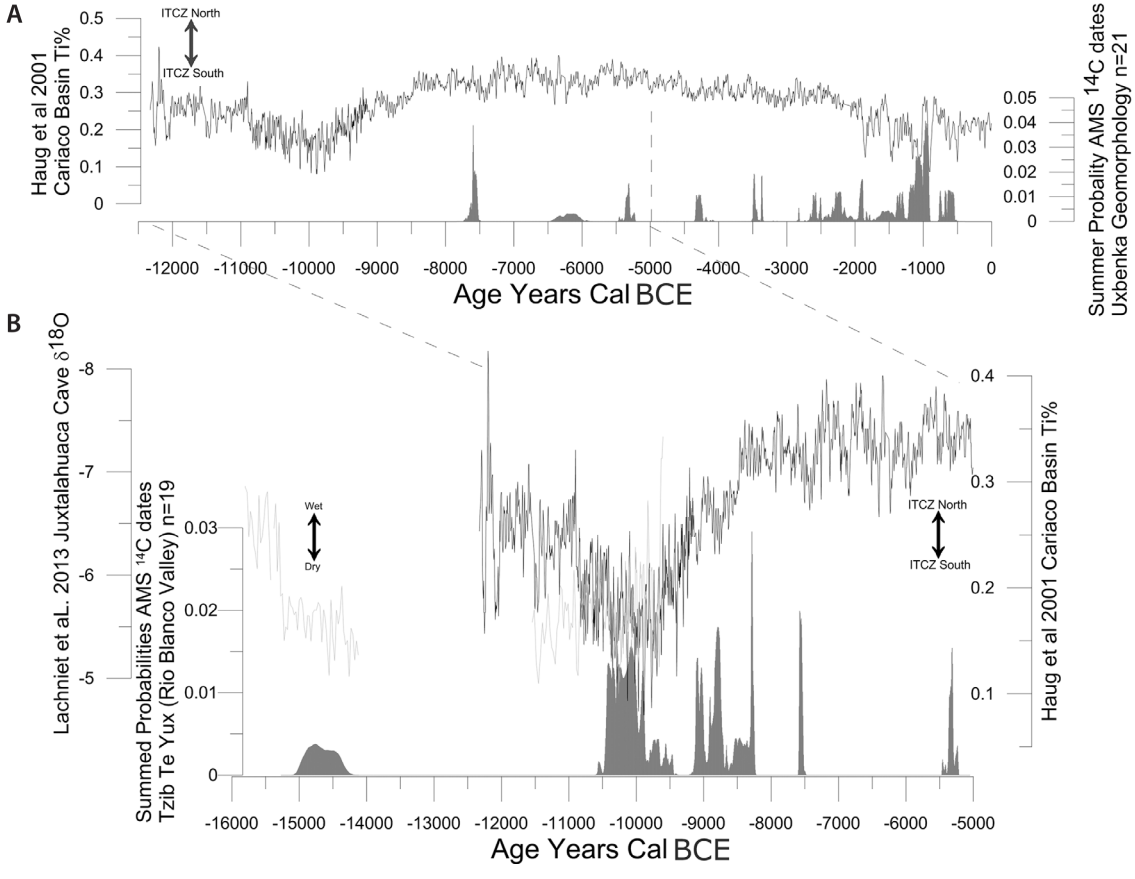

Figure 2.2. Climate and summed ^{14}C probability distributions from Rio Blanco Valley sites. (*A*) The Cariaco Basin percent titanium ITCZ precipitation proxy (Haug et al. 2001) plotted with 14^{C} probability density from geomorphological excavations of the Rio Blanco terraces. (*B*) is the Central Mexico Juxtlahuaca Cave $\delta^{18}O$ oxygen proxy (Lachniet et al. 2013) plotted with the probability distributions of ^{14}C dates from Tzibte Yux rockshelter, located in the Rio Blanco. These are only dates from intact stratigraphic layers. The cultural affiliation of the earliest dates (pre-14,000 BCE) is tentative. Combined, these show regular human activity and landscape impacts throughout the Holocene.

Demarest, et al. 2016), characterized by ranges of sampling resolution, chronological precision, and issues of comparability surrounding the use of multiple proxies (isotopes, sediment density, carbonate weight percent, and flouresence). Paleoclimate data suggest cooler and drier conditions when the first humans arrived in the region. The Cariaco shallow marine record off the coast of Venezuela (Haug et al. 2001; Petersen et al. 2012) and shallow lake records from Petén provide a proxy for changes in the position of the ITCZ, suggesting that the initial human colonization of the neotropics was during a period that was drier (Escobar et al. 2012; Haug et al. 2001) and cooler (Grauel et al. 2016) than the Holocene. This is supported by numerous ecological studies in lower Central America and tropical South America (e.g., Piperno 2011a; Piperno and Jones 2003).

Rainfall reconstruction provides a paleoclimate backdrop for our research in southern Belize (Figure 2.2). A drier Late Pleistocene shifts to wetter conditions during the early Holocene and then a trend toward drier conditions later in the Holocene, likely related to insolation changes in the strength of the regional monsoon. The Juxtlahuaca $\delta^{18}O$ speleothem record (Lachniet et al. 2013) from Central Mexico is closer to southern Belize and is one of the few records of the North American monsoon covering parts of the Late Pleistocene and Younger Dryas. We rely on two locally generated rainfall records from Yok Balum Cave, located near to the ancient city of Uxbenka in southern Belize, for the last 2,100 years. The Yok I $\delta^{18}O$ record (Kennett et al. 2012) is a highly resolved (mean resolution ~1 year, error <10 years) ITCZ rainfall reconstruction covering the last 2,100 years. The Yok G $\delta^{13}C$ speleothem gives even higher resolution covering the last 550 years (mean resolution 0.3 years, error <4 years).

Cultural History of Southern Belize

Mesoamerican Foragers before Agriculture

New World colonists arriving in Central America by at least 12,500 BCE (Chatters et al. 2014) encountered a very different, and less tropical, environment than today. The landscape was composed of "heterogeneous, even patchy, vegetation across small distance scales; and stretches of forest alongside water courses in regions where forests were significantly reduced" (Piperno 2006:286). Pollen and macrofossil plant data suggest forested areas were composed of tropical vegetation, but with a patchy distribution in more diverse ecosystems than simple Pleistocene grassland / Holocene

forest models suggest (Piperno 2011a). Confronted with a diversity of large and small mammals and a wider range of riparian forest and grasslands, humans would have initially adapted to landscapes that were different from today's. By 9000 BCE conditions were becoming wetter and warmer and, in the Petén, there is evidence that closed-canopy forests were undergoing anthropogenic burning (Anderson and Wahl 2015; Renssen et al. 2009), with mixed herbaceous and woody plants being represented in charcoal records. Pre-agricultural burning peaks between 6000 and 4000 BCE (Schüpbach et al. 2015), during the Holocene Thermal Maximum, arguably the warmest and wettest period of the Holocene (Renssen et al. 2009). After 8500 BCE the abundance of higher-ranked plant and animal resources declined as rainforest overtook many Pleistocene open areas where game would have fed on scrub and grasses (Piperno and Pearsall 1998).

Waves of early colonists spread rapidly along the Pacific coast, reaching southern Chile before 12,500 years ago (Braje et al. 2017; Dillehay et al. 2017). This rapid southward migration was accompanied by significant eastward movements in North America (Halligan et al. 2016; Rasmussen et al. 2014). Colonization of South America necessitated the movement of people through Central America. Human presence has been documented in Panama (Ranere and Cooke 1991) and Costa Rica (Snarskis 1979; Swauger and Mayer-Oakes 1952), Nicaragua (Waters 1985), Honduras (Kennett et al. 2017; Scheffler et al. 2012), and highland Guatemala (Brown 1980; Gruhn et al. 1977).

In Mesoamerica, drier conditions to the north of the tropical Maya Lowlands have facilitated the identification of Paleoamerican surface sites, including locales in central, west, and north Mexico (Gonzalez et al. 2015; Ochoa 2012; Sanchez and Carpenter 2012). In the Maya Lowlands, with high precipitation and extensive tropical foliage, fewer surface sites have been identified. One exception is El Gigante rockshelter (Kennett et al. 2017; Scheffler et al. 2012), a large rockshelter in western Honduras on the periphery of the Maya Lowlands. There, stratified deposits from 7000 to 9000 cal BCE include well-preserved macrobotanical remains as well as evidence of hunting and food preparation. In the northern Yucatan Peninsula, a near-complete human skeleton was found with extinct fauna in a submerged cave (Chatters et al. 2014). The minimum age of this skeleton is 10,000 BCE based on U-series dates of small calcite florets that had precipitated on bone before the skeleton was submerged by rising sea and groundwater levels.

The Archaic period is better documented, particularly outside of the Maya area in central and western Mexico, where studies have examined the origins of agriculture, diet changes in coastal settlements, and the emergence of social complexity (Flannery 2002; Kennett et al. 2010; Lesure 2011; MacNeish and Nelken-Terner 1983; Rosenswig 2014; Rosenswig et al. 2015; Smith 1997; Voorhies et al. 2002). In the arid regions of northern Mexico, where ground visibility and site detection are not hampered by dense tropical vegetation, there is a long history of research into Archaic period adaptations (Sanchez and Carpenter 2012). In the tropical Maya region, however, far less is known about tropical adaptations during this time (Kennett et al. 2010). Recent studies suggest a gradual adoption of domesticated plants by 4000 BCE (Rosenswig et al. 2014), although in the Soconusco, full-scale maize agriculture may not have been adopted before 1000 BCE (Rosenswig et al. 2015) even though sedentary agricultural communities were present by 1000 BCE. Between 8000 and 3000 BCE, the gradual processes of plant domestication were under way in Central America, with evidence for human cultivation of native crops including maize (*Zea*), manioc (*Manihot*), arrowroot (*Maranta*), and yams (*Dioscorea*) in parallel with the exploitation of wild resources by transitional hunter-gatherers (Greaves and Kramer 2014; Piperno 2011b). Recent studies have also emphasized the importance of the transition to the Archaic as a time of mixed and flexible subsistence economies, as evidenced by a broad range of wild plant foods and early domesticates at El Gigante rockshelter in Honduras (Kennett et al. 2017; Scheffler 2008).

The "spotty nature of Archaic-age archaeological data from Mesoamerica means that what we know is likely not representative of the range of peoples and the variety of adaptations that existed across the region" (Rosenswig 2014:142), particularly in the broadleaf forests of the tropical Maya Lowlands and especially for the Early Archaic period (8000–5000 BCE). A wide range of cultural changes occurred during the Archaic, with a general trend toward increased reliance on plants as a source of food and changing environmental conditions that may have favored plant tending and agriculture. Thus, social changes were likely mediated by subsistence changes, and these were driven by demographic pressure, environmental change, and socioeconomic competition (Winterhalder and Kennett 2006). The period from 8000 to 6000 BCE is generally considered to have been wetter and warmer, prior to a drier interval lasting until 3500 BCE (Mueller et al. 2009). This suggests that the transition to agriculture spanned several

phases of significant climate and environmental change, with the relationships between them poorly constrained.

Paleoamerican and Early/Middle Archaic Sites in Southern Belize

In the Southern Maya Lowlands only a handful of Paleoamerican sites have been identified, mostly lithic scatters that cannot be accurately dated (Hester et al. 1982; Kelly 1993; Lohse et al. 2006). The Preceramic lithic chronology of the region is not secured to absolute dates (Stemp et al. 2016). Since 2012, we have been conducting excavations at three rockshelter sites in southern Belize. These sites (see Figure 2.1, Plate 2.1) are Tzibte Yux rockshelter, located in the Rio Blanco Valley near to the Classic period Maya center Uxbenka, and Mayahak Cab Pek and Saki Tzul rockshelters located in the upper reaches of the Bladen Branch of the Monkey River. All three rockshelters have stratified deposits dating to around the time of the arrival of humans into the region, sometime before 10,500 cal BCE. These sites are remarkable both for their chronological sequences, which are intact for large segments of the Late Pleistocene and Holocene; their locations; and the information they can provide regarding human adaptations over time.

Tzibte Yux (Prufer, Meredith, et al. 2017) is a dry rockshelter overlooking the Rio Blanco, 1.1 km from the Classic period site Uxbenka. The total surface area inside the dripline is approximately 190 m^2. The ground surface is a scatter of *Pachychilus* sp. (jute) snail shells, ceramics, lithics, and some modern debris, indicating that it is still used as a dry refuge from frequent rains and the tropical sun. The wall that forms the shelter overhang is coated in places with patchy remnants of a plaster mix of jute shell, carbonate minerals, ash, and ceramic, likely an ancient frieze or sculpture affixed to the massive white cliff (Meredith 2014). Jute shells are well documented as faunal remains in many Classic Maya contexts (Healy et al. 1990), including caves (Halperin et al. 2003), suggesting they were a widely consumed protein source (Nations 1979).

Between 2012 and 2015 nine 1 m^2 and 2 m^2 test units were excavated at Tzibte Yux. Excavations were in 5 cm levels, and all lithics, faunal bone, and carbonized organic remains were point plotted. They consistently reveal a uniform cultural sequence of Paleoamerican deposits overlain by highly disturbed Archaic and Classic Maya contexts. The upper levels consist of highly disturbed midden fill of fauna, lithics, ceramic, jute, and some disarticulated and very poorly preserved human remains. While several dates have been obtained from this matrix, they are not in chronological sequence and include both Classic Maya and Archaic period dates. This

Plate 2.1. View of excavations at Tzibte Yux rockshelter overlooking the Rio Blanco.

is likely due to the upper levels (Classic period and much of the Archaic) having been disturbed for the construction of the frieze and possibly mined for jute for other purposes potentially including pottery tempers or dietary calcium carbonate. A date on a single piece of wood charcoal from an intact part of the jute/plaster frieze dates to 8275–8190 cal BCE, although ceramics fragments in the plaster indicate a much later construction. While the extent of this disturbance across the rockshelter is variable, radiocarbon dates suggest that the disturbance extends to 8000 cal BCE. Below the disturbed context (see Figure 2.2) there is a dense jute middle lens, which is very tightly packed with the shells forming an interlocking surface that is very difficult to excavate. No ceramics were found in the jute lens, and preserved segments appear to constrain Early Archaic through Late Paleoamerican periods. Below the jute lens there is a distinctive change to yellow clay, overlying a darker reddish clay. The amount of jute drops off appreciably, although faunal bone, charred wood and seeds, and lithic debitage continue. Both clay layers are of Paleoamerican age, with dates ranging from 7050 to 10,500 cal BCE (Prufer, Meredith, et al. 2017). Two dates on wood charcoal and a burnt seed from the red clay layer (see Figure 2.2) provide overlapping ages between 14,227 and 15,997 cal BCE associated with lithic debitage and faunal bone fragments from small and medium size mammals. Assuming that the early dates and cultural material are contemporaneous suggests a human presence consistent with the earliest estimates in South America (Dillehay et al. 2015), although any cultural affiliations to the dates are tentative pending additional confirmatory data.

Mayahak Cab Pek and Saki Tzul are two much larger rockshelters located in an interior valley of the Maya Mountains in the Bladen Nature Reserve (Plate 2.2), a protected wilderness area where there has been minimal human disturbance of archaeological sites. Both rockshelters were first investigated in 1998 by the Maya Mountains Archaeological Project. Shallow excavations at both sites produced numerous burials and demonstrated excellent preservation of human and faunal remains (Saul et al. 2005). Recent work from 2014 to 2017 has shown that the occupation of these rockshelters began prior to 10,000 BCE and continued through 1000 CE (Prufer 2018). DNA from well-preserved skeletons from both Saki Tzul and Mayahak Cab Pek reveals that at 7300 BCE early colonists were directly related to New World founders and the Anzick Clovis skeleton found in Montana, indicating rapid radiation of humans from North to South America in several migrations prior to 6000 BCE (Posth et al. 2018). Preliminary analysis of faunal remains suggests only small shifts in species composition over the

Plate 2.2. Aerial view of the giant cliff face of Saki Tzul ("white mountain" in Q'eqchi' Maya), located in the remote Bladen Nature Reserve. This huge rockshelter served as a shelter and food-processing site for most of the Holocene.

Holocene but a likely change in selection or preference from larger mammals in the early part of the record to smaller mammals in the later part (Orsini 2016). Like Tzibte Yux, the Bladen rockshelters contain enormous deposits of consumed jute shells and in some levels exceed 50% of the matrix. Evidence of Paleoamerican and Early Archic peoples in Mesoamerica is scarce. The work described here is the first stratigraphic excavations in the Maya Lowlands that are well dated.

The Late Archaic through Middle Preclassic in Southern Belize

The Late Archaic, including the transition to agriculture, is a time period for which we have some limited data, although this interval remains enigmatic. Humans were present based on geomorphological studies, but unlike for parts of northern Belize (Rosenswig et al. 2014) and the Pacific coast of Mexico (Kennett et al. 2010; Voorhies et al. 2002), we have not identified open-air habitation sites in southern Belize. In addition, Early and Middle Preclassic ceramic phases remain elusive (Jordan and Prufer 2017), and no evidence of stone platform architecture has been documented, despite a century of archaeological excavations in southern Belize (Braswell and Prufer 2009). There is still compelling evidence that early people lived in this region in smaller pre-agricultural and agricultural settlements.

Excavations in alluvial terraces and near Uxbenka, located in the Rio Blanco drainage, have documented land clearing and associated burning as early as 8000 cal BCE (see Figure 2.2a) with burnt horizons associated with lithic debris occurring throughout the Holocene (Meredith et al. 2016). Other excavations on erosional soils near the Uxbenka site core document continued land clearance away from the river, likely directly associated with early farming activity from 1720 to 970 cal BCE (Culleton 2012). Paleoecological data from a sediment core taken from the Agua Caliente National Park, a perennially inundated inland lagoon, indicate that human land alteration in association with swidden agriculture is evident by 750 cal BCE in the earliest section of that record, as is the presence of maize pollen from 350 BCE (Walsh et al. 2014). By the Middle Archaic, human impacts on the landscape seen suggest regular clearing of forest vegetation, which likely became more sustained leading up to the first agriculturalists in the region likely after 1000 BCE (Figure 2.2a).

The Late Preclassic Period through the Classic Period: Development and Decline at Uxbenka

The Classic period of the Maya represent the greatest investment in the built environment in the foothills and the Maya Mountains. The earliest known communities in southern Belize are Ek Xux, located in the Maya Mountains; Uxbenka, in the foothills (Prufer, Thompson, et al. 2017); and small coastal trading communities (McKillop 1996). Other centers did not develop until the end of the Early Classic period ca. 400 CE (Nimli Punit, Pusilha, and Quebrada de Oro) or the Late Classic ca. 700 CE (Lubaantun, Xnaheb, Muklebal Tzul, and a host of smaller centers). By 750 CE there were at least 40 centers with public architecture in southern Belize, with largely independent rulers and significant populations dispersed across the agriculturally rich hills and valleys.

These communities are distributed across four different ecological zones. Ek Xux, Quebrada de Oro, and Muklebal Tzul are located in tributary valleys of the Bladen River, an area hosting important mineral resources and rich agricultural soils derived from the underlying volcanic bedrock of the Maya Mountains (Dunham and Prufer 1998). Pusilha is located along a navigable upper section of the Moho River, with access to rich alluvial soils (Braswell and Prufer 2009). Coastal sites enjoyed marine trade routes and resources (Robinson and McKillop 2013). Finally, Uxbenka, Lubaantun, and Nimli Punit are located along the along a ridge comprising the fertile Tertiary Toledo Uplands extending from the Maya Mountains to the north to the coastal plain in the south (Hammond 1975; Prufer et al. 2011). Two general points are consistent with the evidence: first, settlements in the region appear to conform to local topographic conditions, and, second, they are closely tied to important resources such as productive farmland. For example, Pusilha, Quebrada de Oro, and Ek Xux are located on deep alluvial soils ideal for agriculture; these centers were highly nucleated. In contrast, Uxbenka, Lubaantun, Nimli Punit, and Muklebal Tzul are positioned in high-relief hilly environments with settlements spread across ridges and hilltops in clearly differentiated groups.

Given the Archaic and Preclassic background for the Rio Blanco Valley, it is likely that the Classic period chronologies for most sites, which are based on architectural seriation and ceramics, underestimate the antiquity of settled communities in the region. The exception is Uxbenka, where our work since 2005 has anchored development and decline of the community and polity to an absolute chronology grounded in over 175 high precision

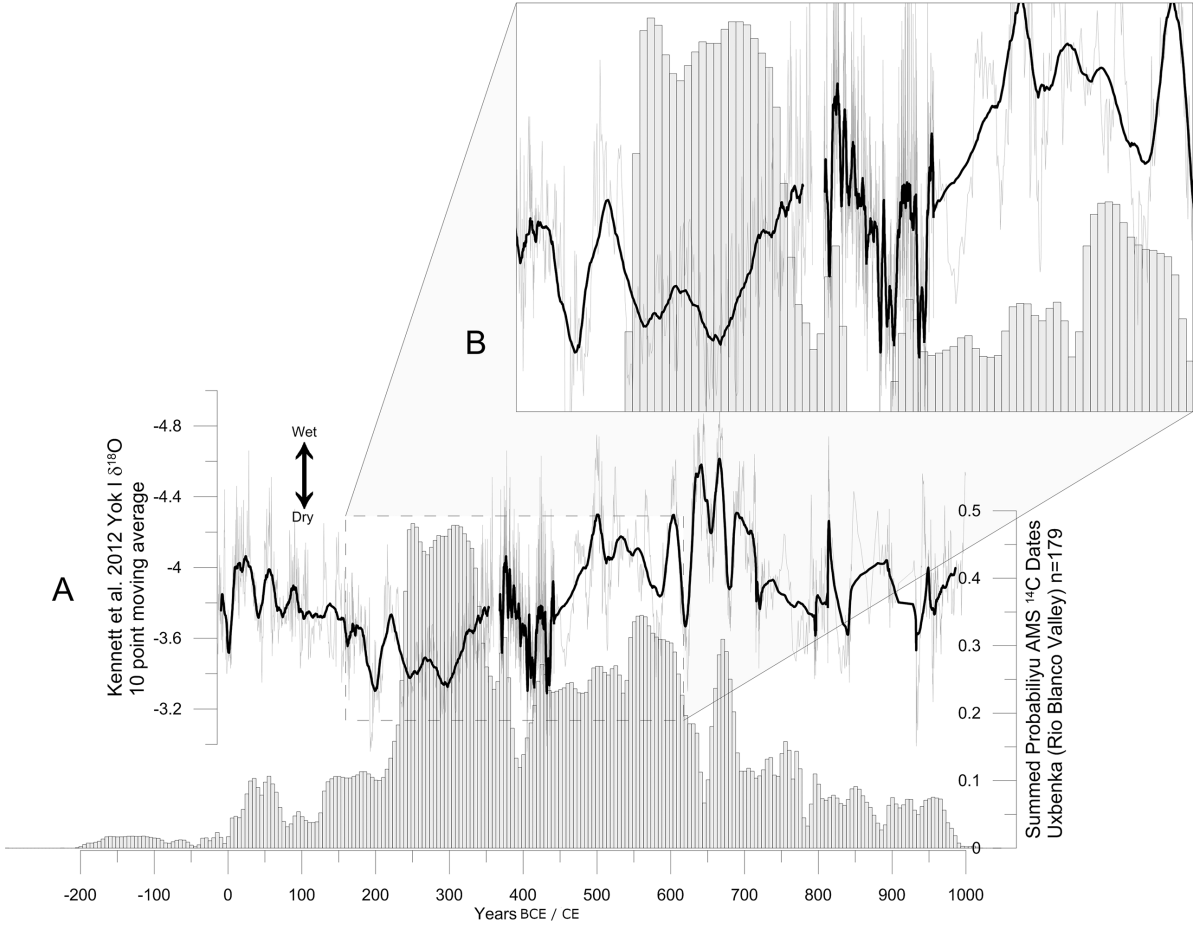

Figure 2.3. (*A*) Yok Balum Cave Yok I $\delta^{18}O$ climate proxy with a 10-point average. This shows significant volatility from 350 to 500 CE, a time of reduced activity at Uxbenka in both the site core and settlements based on summed ^{14}C probabilities. Other periods of intensive multidecadal drying are found in the Late and Terminal Classic periods, corresponding with the decline of the polity before 880 CE. Inset (*B*) shows detail of period from 250 CE to 550 CE. Bar plot is probability distributions of ^{14}C dates from Uxbenka from the Classic period occupation from 200 BCE until 1000 CE.

AMS ^{14}C dates (Figure 2.3) from both settlement and site core areas. Locally developed paleoclimate proxies for the region provide context for interpreting some periods of cultural change.

The first known settlements at Uxbenka date to after 200 cal BCE based on charcoal dates from east of the site core near the Rio Blanco (Prufer, Thompson, et al. 2017). The few dates from this time period suggest low population density, and there is no evidence of masonry architecture. Approximately two centuries later we begin to see architectural developments in the site core (Aquino et al. 2013; Culleton et al. 2012). During this time Uxbenka was the only known site in the region with monumental architecture until sometime after 300 CE, when Ek Xux is founded in the Bladen Branch. It is not until three centuries after Uxbenka was an established polity that competing sites on the Toledo Uplands begin to appear. Elsewhere we have argued that this lack of competing polities and contestable boundaries makes the site an ideal laboratory to study the spatial expansion and evolution of status differences in a geopolitical state (Prufer, Thompson, et al. 2017).

Investment in the site core focuses initially on the Group A Stela Plaza between 60 and 250 CE (Culleton et al. 2012) and a 550 m long ridge housing public architecture that was initially settled before 250 CE (Aquino et al. 2013). Both of these areas may have housed earlier populations and small dirt platforms, and some postholes have been identified in the core area dating to before 100 CE (Prufer et al. 2011). The development of the site involved monumental landscape alterations, including leveling of hill and ridge tops and filling of hill slopes with debris to accommodate the footprint of monumental architecture. Data from lidar and excavations indicate that this investment of human capital produced an elite-focused political and ceremonial core by 400 CE (Figure 2.4). Additional modifications to the site core did not involve platform expansions (Prufer and Thompson 2014; Prufer et al. 2011). The Early Classic represents the greatest sustained investment in monumental construction at the site. The cessation of this activity corresponds to what may be a period of climate volitility around 400 CE seen in Yok I (see Figure 2.3).

Following 500 CE, construction in the site core is limited to the expansion of existing large structures and construction of small, single-phase buildings as well as episodes of replastering plazas and architecture. This is accompanied by continued expansion of the settlement system, including high-status households. Dynastic leadership of the site appears to continue unabated with the erection of monuments beginning in the Early Classic

Figure 2.4. Monumental alterations to the landscape to accommodate core architecture are clearly visible on a lidar elevation map of Uxbenka. Cut and filled hill and ridge tops were mostly constructed before AD 400 (Prufer et al. 2015; Prufer and Thompson 2016). This high-relief landscape is partly a result of 10 millennia of fire and erosion. Perhaps the largest contributor to the current landscape has been agricultural clearing starting by the end of the archaic (Culleton 2012). Groups discussed in the text are labeled, with Group A being the Stela Plaza. Map by A. E. Thompson for BPAAP.

period (at approximately 380 CE) and continuing through the Late Classic period with the final known date at 780 CE (Wanyerka 2009). A large tomb, featuring an entry stairway and located in a settlement group connected by a ramp to the Stela Plaza, contains multiple interments dating to both the Early and Late Classic periods. Clusters of higher-status residential and public architecture, which we designate as district seats, continue to flourish up to 2 km from the site core, although they are primarily located near to probable east–west trade routes connecting the Caribbean Sea to the Petén (Prufer, Thompson, et al. 2017). These developments correspond with several centuries of stable precipitation (Figure 2.3).

Following the establishment of Nimli Punit, Pusilha, and perhaps Lubaantun(and many smaller centers) all within 20 km of Uxbenka by CE 550, Uxbenka's geopolitical primacy began to wane. A major ceremonial cave used throughout the Early Classic period and located in view of all the larger architectural groups at Uxbenka ceased to be used after 500 CE (Moyes and Prufer 2013). Throughout the Late Classic period, settlements expand farther from the Uxbenka site core but become more impoverished, while larger settlements near to the site core enjoyed access to a range of trade goods. This is likely an indicator that established elites were retaining control over key resources related to agricultural and economic production, while growing populations living on the periphery had access to a smaller proportion of benefits conferred on those near the site core.

The disintegration of the Uxbenka polity was part of a regional geopolitical collapse during the early Terminal Classic period. At Uxbenka, the elite power may have been in decline by 800 CE. The final monument date at Uxbenka was 780 CE (Stela 15), within 30 years of terminal dates from Lubaantun, Pusilha, Nimli Punit, and several smaller sites in the region (Ebert et al. 2014). The final secure dates on architecture from the Uxbenka site core are prior to 880 cal CE, although settlements may persist through 1000 cal CE (Aquino et al. 2013; Culleton et al. 2012; Prufer, Thompson, et al. 2017). This occurs in the context of dry intervals observed in the Yok I paleorainfall record (see Figure 2.3a). Terminal Classic dates from within the site core suggest a residual population from 850 to 1000 CE.

Postclassic to Historical Populations

There are no known Postclassic centers in southern Belize, aside from a network of small Postclassic island trade centers (McKillop 2010). Still, there were people living and farming near the abandoned Classic period political centers. At the time of Spanish contact there were dispersed

Mopan- and Chol-speaking Maya communities in southern Belize (Sapper 1985; Thompson 1930, 1988). The town of Campin was located along the Monkey River, and the town of Paliac was probably located along the Rio Grande (Jones 1989). Two other villages, one named Yaxal, said to have been located 38 km from Paliac, and another named Misit, are less clearly described.

In 1684 Paliac residents killed three Franciscan missionaries who had accompanied an expedition to southern Belize seeking to extract marketable cacao. Gov. Bruno Tello y Guzman, following a decree authorizing the reduction Paliac, formally announced a policy to avenge the killings of the three Franciscans. A large expedition headed by Capt. Juan del Castillo y Toledo was mounted, but, ironically, it instead proceeded to try to open a route to Tah Itza in Petén, Guatemala, to conquer the Itza Maya (Jones 1989).

Forced resettlements in southern Belize have not been documented, although if J. Eric Thompson's (1938) recounting of archival documents is credible, these efforts were episodic and fomented repeated rebellion. Less credible are assertions (Thompson 1938:593) that the result of the forced population movements was the region becoming "to all intents and purposes, uninhabited forest," largely because this is inconsistent with the evidence. There is a growing consensus among scholars that some numbers of Maya-speaking people remained present in southern Belize after the Spanish incursions (Downey 2009; Wainwright 2015).

Several lines of evidence support the continuous presence of people in southern Belize during the last 400 years. Data from Agua Caliente (Walsh et al. 2014) indicate that fire activity within its watershed did decline during the Postclassic, 1000–1520 CE, but fire was never entirely absent. After 1400 CE, fire intensity increased until 1900 CE, suggesting that the watershed surrounding Agua Caliente (which includes Uxbenka) was an active agricultural landscape.

Five radiocarbon dates from small settlement groups at Uxbenka date between 1400 and 1900 CE, suggesting that people resided and farmed in the region during the Postclassic and early historical periods. These are supported by charcoal dates from geomorphological pits along the Rio Blanco (Figure 2.5). Near to several outlying settlements at Uxbenka we have documented historical households, all of which have surface scatters of pottery mixed with other debris including bottle glass and metal fragments. The ceramics are primarily the remains of jars and bowls and are undecorated, making comparative analyses difficult.

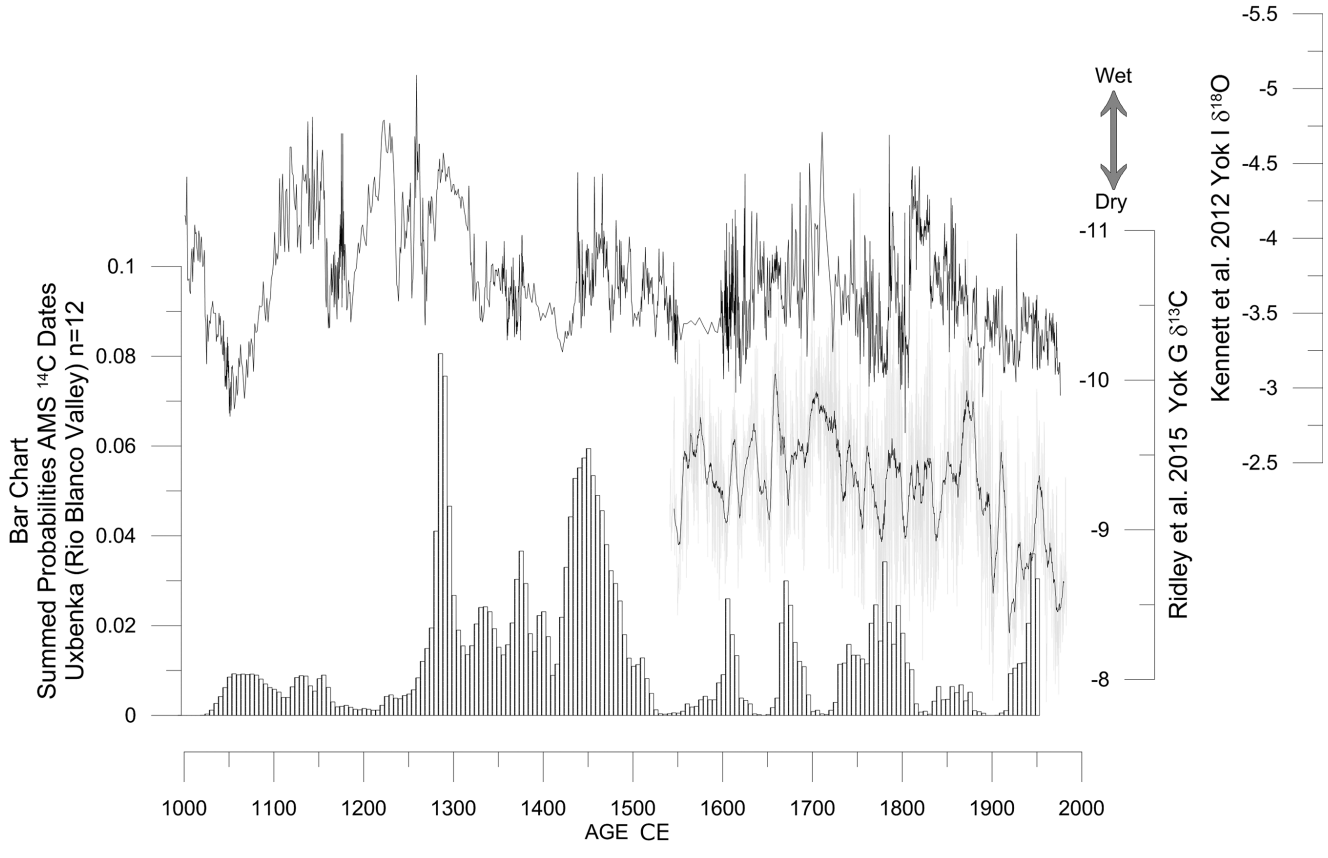

Figure 2.5. Yok Balum Cave Yok I $\delta^{18}O$ climate proxy from 1000 to 2000 CE plotted with Yok Balum Cave $\delta^{13}C$ climate proxy from 500 to 2000 CE. Bar plot is probability distributions of ^{14}C dates from Postclassic and early historic contexts at Uxbenka and from dates on surfaces from geomorphological testing in the Rio Blanco Valley.

Starting around 1880, Q'eqchi' and Mopan Maya in Guatemala began to seek refuge in southern Belize. For the Q'eqchi', this was largely in response to labor conditions deteriorating into slavery on German-owned coffee plantations in Alta Verapaz. For the Mopan, it was in response to increasing economic disparities and land dispossession in the Petén (Castellanos Cambranes 1985; McCaffrey 1967). For both groups, the value of fleeing highly oppressive and violent colonial and national structures outweighed advantages of remaining in familiar environments. These migrants no doubt encountered existing farming communities in the form of small hamlets or family groups. This is consistent with archaeological evidence suggesting low-density farming and little investment in monumental landscape alteration in the early historic period. At that time the colonial government in the district capital, Punta Gorda, was largely unaware of anyone living in the interior and lacked even the most basic maps of the region (Wainwright 2015). In 1880 the first rural settlement acknowledged by the government was a plantation established by the Kramer estate on purchased land, and a group of Q'eqchi' Maya from Guatemala were somehow enticed to settle and work lands of the estate (Wilk 1991). Within a decade, the first recognized Mopan Maya village was established at San Antonio, but not before stopping at what may have been an existing community in Pueblo Viejo (Thompson 1930). Uxbenka and the community of Santa Cruz lie between those two settlements. Thompson (1930:40) also notes smaller settlements called *alquilos* consisting of a few families living in the forest outside of San Antonio. Several of the historic sites we documented are likely old *alquilos*, and this was a pattern of settlement prior to formal villages.

Village populations grew over the next century, and communities fissioned with emigrants forming new villages. By 1997 the number of Q'eqchi'- and Mopan-speaking villages in the Toledo exceeded 35, and the population surpassed 11,000 (Toledo Maya Cultural Council and Toledo Alcaldes Association 1997). The majority of the Maya-speaking villages are scattered across the Toledo Uplands (Figure 2.1), farming the same lands that were first cleared as long as 10,000 years ago.

The distribution of the modern villages highlights the importance of trade routes throughout the occupation of the region. We know little about spatial relationships during the Preceramic, but they likely were guided by access to water. From the Late Preclassic period onward, coastal, riverine, and overland foot paths dominated economic and social interactions and networks. Archaeological reconstructions of past economies in southern Belize have frequently cited proximity to trade and communication routes

as central to site locations and success (Braswell and Prufer 2009; Hammond 1978; Prufer, Thompson, et al. 2017). At Uxbenka a likely ancient route connected the coastal plain to the central Petén, and today this same route is a modern road. Beginning in the 1950s with a dirt road connecting the district capital of Punta Gorda to the village of San Antonio, the development of roads has been a political priority. At the time, most villages were connected only by foot paths or muddy logging paths, and rivers played an import role as routes of commerce and information.

Today population growth follows roads. Some of the earliest modern settlements were located on lands near to larger Classic period political centers prior to the development of major roads, including the Mopan communities of Pueblo Viejo and San Antonio, within 3 km of Uxbenka, and the Q'eqchi' villages San Pedro Columbia, proximate to Lubaantun, and Poite, near to Pusilha. Others, like Cramer Estates and Crique Sarco, were settled in response to economic opportunities provided by plantation agriculture and logging and do not have clear links to precolumbian agricultural landscapes. In the Toledo Uplands, road development likely traces a series of foot paths connecting communities, many of which predate vehicular access. There we see modern populations sharing the landscape in close proximity to ancient population centers. Along the southern highway, villages have been settled because of access the highway afforded as an economic corridor. There are fewer associations with ancient settlements. Finally, a large series of ancient settlement in the Maya Mountains have no corresponding modern settlements specifically because they have been set aside as forest or nature preserves.

Conclusions

Historical trajectories of settlements within a region can provide data of how humans adapt and reorganize over long periods of time, providing insights into underlying processes of resilience and reorganization in response to climatic, demographic, and social changes. Such approaches have been more common in Old World archaeology (Adams 1965; Jameson et al. 1994), where longitudinal studies capture aspects of human–environmental dynamics across major technological innovations. These types of studies point to critical environmental qualities as being constant in their importance, such as access to water, productive soils, and spatial networks connecting human communities for trade and communication (Adams 1978). Similar studies in the New World have also emphasized shifting

relationships between people and their landscapes but on shorter time scales than we present here (Sabloff and Ashmore 2001).

Southern Belize is a relatively small region with a continuous history of occupation dating from the initial colonization of the Americas at the end of the Pleistocene though to the present. Humans on this long-modified landscape have been continuously drawn to the same features and resources throughout the Holocene, most notably perennial water and rich soils of the Toledo Uplands and the alluvial valleys of the Maya Mountains—the same landforms and notably rich soils as those of the first cities and states. The early Holocene colonists used fire for land clearing millennia prior to the development of agriculture. The Classic period was the time of peak populations and monumental transformations to the landscape and the built environment. In the foothills we have no evidence of agricultural intensification in the form of extensive terracing as seen at Caracol (Chase et al., Chapter 6 this volume) or ditched or raised fields commonly found throughout the lowlands. We attribute this largely to a combination of high rainfall and the Toledo Uplands soils, which form rapidly when exposed to weathering and erosion.

Following the regional disintegration of geopolitical institutions in the Terminal Classic period, there is significant evidence that small populations remained but without monumental investment in the built environment. It is likely that agricultural communities continued to thrive in the region following Spanish attempts to forcibly relocate communities. Starting in the 1880s, as Q'eqchi' and Mopan speakers established new communities in the Toledo district, they likely settled among or near to small hamlets of farmers in the region, connecting modern residents to a 10 millennia history of continuous occupation.

Acknowledgments

We are grateful to the Alphawood Foundation for their long-term support of this research in southern Belize. We are also grateful to the National Science Foundation (HSD0827305, BCES163206). This work would not have been possible without support of the Belize Institute of Archaeology and in particular John Morris. We thank Amy Thompson for map production. We acknowledge out partners at Ya'axché Conservation Trust and the people of Santa Cruz village.

3

The Natural and Constructed Landscape of Salinas de los Nueve Cerros, Guatemala

BRENT K. S. WOODFILL AND MARC WOLF

Salinas de los Nueve Cerros is a sprawling Classic Maya city located at the nexus of the Guatemalan Highlands and Southern Maya Lowlands (Figure 3.1). The city is defined by its idiosyncratic landscape, which includes the Nueve Cerros Ridge, the Cerro Tortugas salt dome, and the Chixoy/Salinas River. These three features provided the city's identity, the foundation of the regional economy, and an important trade and communication route, respectively. As the settlement expanded into and across myriad environmental niches, these three features continued to be of primary importance for the entire surrounding population, rural and urban, elite and commoner.

The Nueve Cerros Ridge is a sawtooth sierra about 21 km long on the city's western edge that contains multiple caves, springs, and mountains that served as the residents' religious center. The Cerro Tortugas salt dome covers about 3 km^2 and rises 200 m over the surrounding floodplain. The dome is found in the city's core, providing a practically limitless supply of brine along with numerous unique material and ideological resources. The Chixoy/Salinas River cuts through the northern part of the city; it is the longest river in the Maya world and forms part of the larger riverine system that connected all major sites in the western lowlands. The river, which changes its name from the Chixoy to the Salinas at the confluence with the brine stream, provides the linchpin of an enduring exchange network that distributed Nueve Cerros exports throughout the Maya world and beyond. It made the city a destination of ideas, goods, and peoples from throughout Mesoamerica.

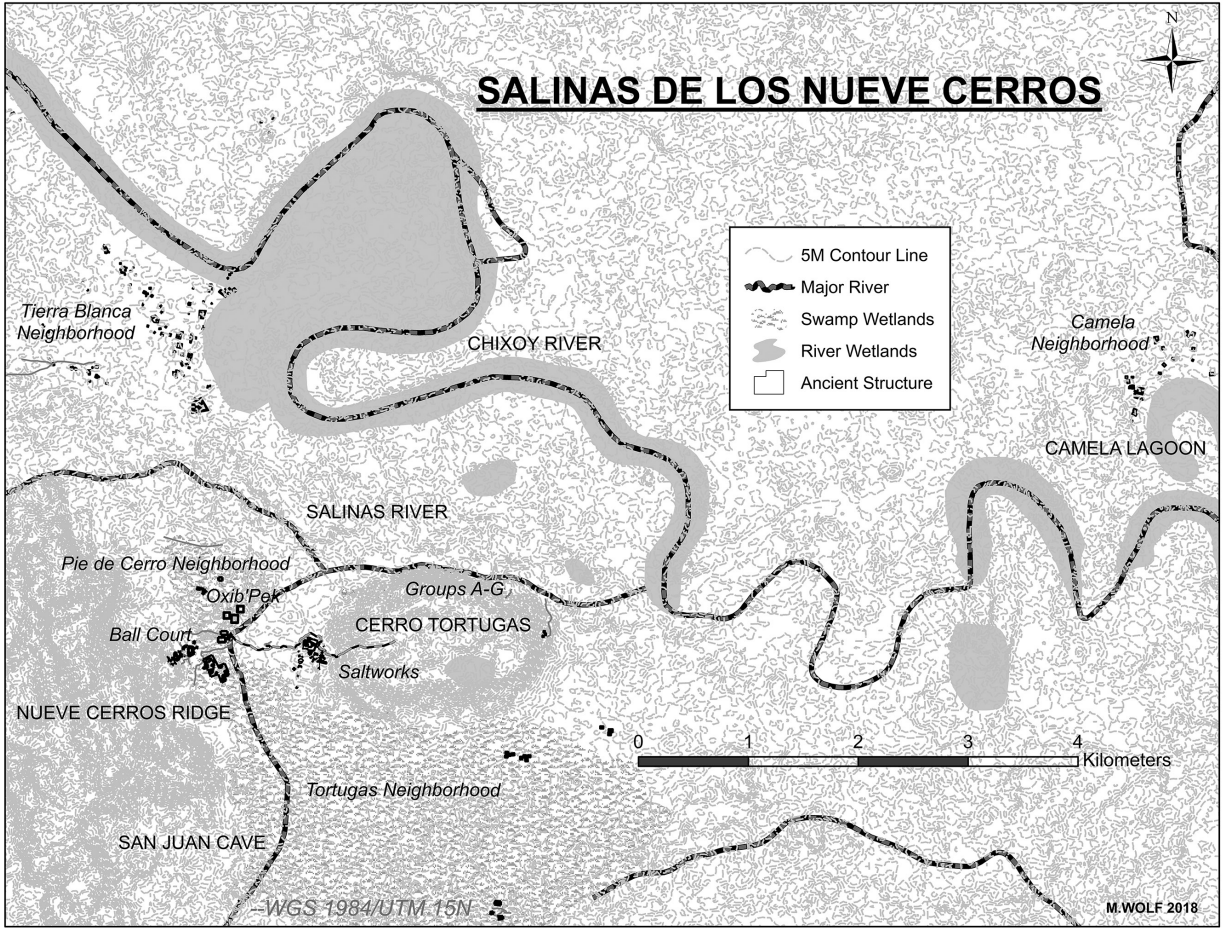

Figure 3.1. Salinas de los Nueve Cerros with areas of research interest and primary geographical features. Map by Marc Wolf modified by Brent K. S. Woodfill.

Nueve Cerros has a long and complex history spanning over 2,000 years from the Early Middle Preclassic through the Early Postclassic (ca. 1000 BCE–1200 CE, Woodfill 2020; Woodfill et al. 2015). Its residents maintained close ties to disparate locations in the Southern Lowlands and the highlands of Guatemala and Chiapas. They produced multiple commodities in high demand in these three zones but were also major consumers of foreign exotics and as well as intermediaries for goods passing through their domain.

The current Proyecto Salinas de los Nueve Cerros has been investigating the city's history and role in interregional exchange since 2010 with the support of the Alphawood Foundation. While the project is still testing and refining our models related to these objectives, it has been apparent since the first field season that the landscape is the key to both. In this chapter, we focus on how the local landscape around Nueve Cerros defined the city's design, economics, politics, and religion.

Settlement Patterns and Urban Design

Nueve Cerros is located within a unique environment, and both the built architecture and the natural landscape present different perspectives, challenges, and conceptions of monumentality. The parallels between the natural and built environments have been discussed by many previous researchers (e.g., Estrada-Belli 1991; Maca 2006; Pugh 2005; Schele and Friedel 1990; Smith 1955; Tate 1992) and it is obvious in Nueve Cerros's wide variety of constructions as well as the use of the natural terrain to highlight Maya cosmology. Dominating the visual landscape are the Nueve Cerros Ridge and the salt dome, but of rivaling importance to the site and region, both ideologically and economically, is the great Salinas swamp and watershed. Its hydrology surrounds and reaches into several of the site's core areas and not only offers the mosaic of natural features that propagate and enrich the area but also unites multiple parts of the site in an otherwise unique ecology that likely strengthened the residents' identity.

The economic core of the Nueve Cerros urban zone is the ancient saltworks (Figure 3.2), investigated in the late twentieth century by Brian Dillon (1977, 1979, 1990; Dillon et al. 1988). Its architectural complexes or amalgamated compounds (Wolf and Bracken 2013) ride the gradual western downslope of the salt dome below a notable cleft or saddle that shapes the hill's profile (Plate 3.1). Atop the salt dome were multiple ponds, including

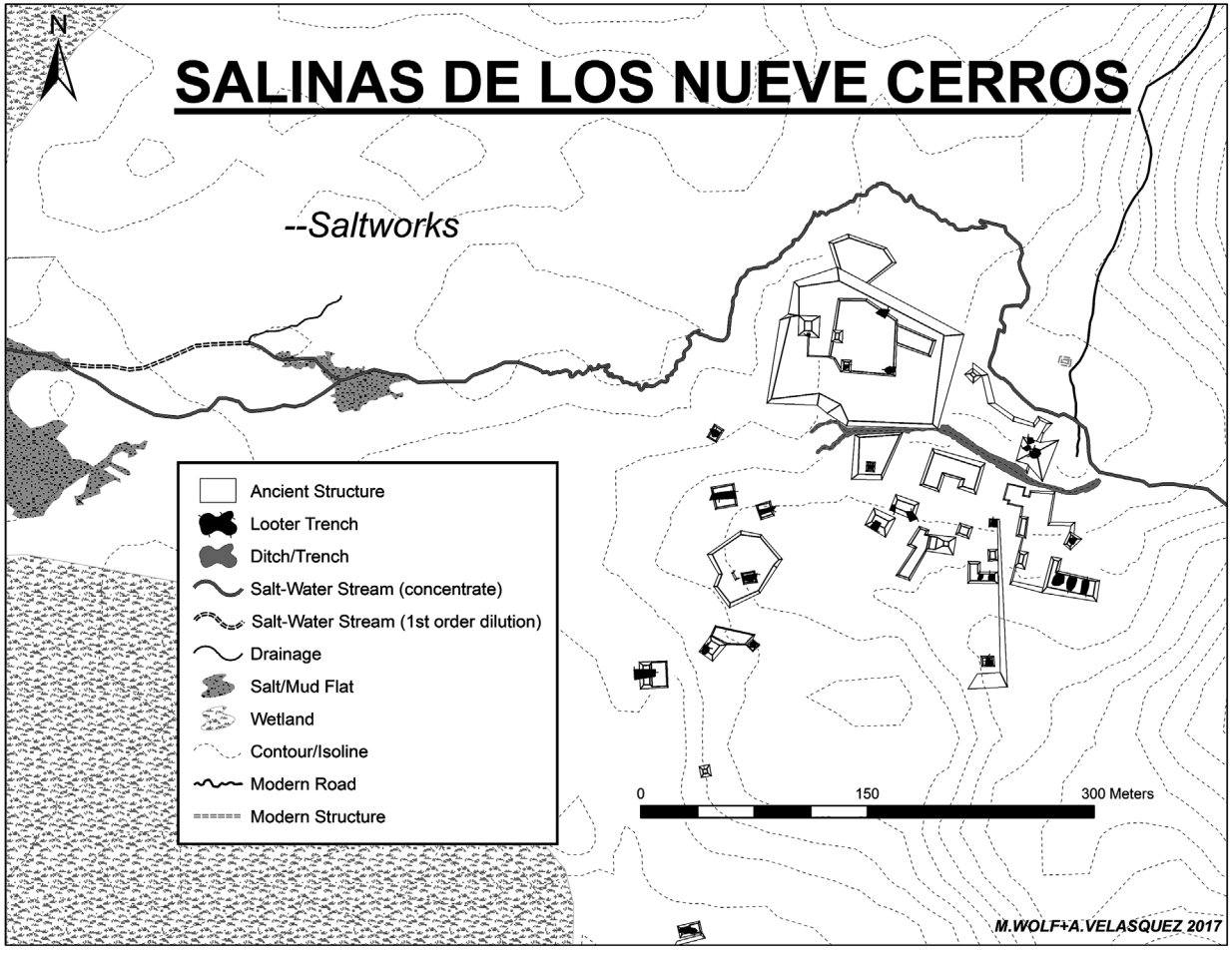

Figure 3.2. The Nueve Cerros saltworks. Map by Marc Wolf.

Plate 3.1. The Nueve Cerros salt flats with the clefted Tortugas dome in the background (photo by Brent K. S. Woodfill).

one that changes color from pinks and purples to greens and browns (Plate 3.2, Plate 3.3), and the whole dome smells of sulfur.

The salt production zone was found on an artificial platform abutting the western edge of the Tortugas dome and was built on either side of the brine stream as it flows to the flats and swampland below (Dillon 1979; Dillon et al. 1988; Woodfill 2020; Woodfill et al. 2015). This platform represented a monumental undertaking, standing over 10 m tall with up to 1,200,000 m^3 of artificial fill containing additional buried structures, workshops, and plazas (Woodfill 2020; Woodfill et al. 2015). It served the dual functions of providing easy access to the brine and "locking" the stream in place by creating a deep artificial chasm for it to flow through.

Most areas of the site with monumental architecture are located on relatively high ground. The two oldest residential zones identified to date are Tierra Blanca and Pie de Cerro. The former is found on a series of natural levees near the Chixoy River, while the latter is located on an elevated stretch of land bordered on the west by saltwater marshes near the Tortugas salt dome and on the east by freshwater marshes fed by springs and streams coming out of the Nueve Cerros Ridge. As the city's population

Plate 3.2. View of dome and salt flats from Nueve Cerros ridge (photo by Brent K. S. Woodfill).

Plate 3.3. Saline pond atop the Tortugas dome colored pink by halobacterium (photo by Brent K. S. Woodfill).

grew through the Preclassic and Classic periods, residents had to reclaim more surface area through large public works programs devoted to raising the surface elevation.

The central ball court (Figure 3.3), for example, is located in a small natural valley surrounded on three sides by the Nueve Cerros Ridge. During excavations in the 2010 and 2011 field seasons, project members documented two major undertakings—the surface was raised 1.3 m during the Late Preclassic period, followed by a second 0.7 m around the beginning of the Late Classic period (Woodfill et al. 2012; Woodfill et al. 2011). In addition to raising the surface, the Maya made additional modifications to channel the water flowing down the neighboring ridge into a large *aguada*; they also straightened a freshwater stream that still runs toward the eastern end of the ball court group (Wolf et al. 2011).

The Pie de Cerro group is also the site of several important additional architectural assemblages including triadic platforms, expansive plazas, possible monument galleries, and large solitary buildings that follow the contours of the Nueve Cerros range. The architecture acts as a permeable gateway between the mountains and the Salinas swamplands, adding an intangible human element to the crystalline sweet waters that drain from

Figure 3.3. The Nueve Cerros central ball court. Map by Marc Wolf.

the hills above, through the constructed world of the living Maya, and into the swampland below.

The Tierra Blanca area is a relatively dense concentration of secular and politicoreligious architecture. The tallest structures at the site are found here, serving as a spiritual inverse to the natural heights of the Nueve Cerros Ridge as well as numerous other monumental structures, several massive elevated open plazas, and a ball court. These platforms are often defined on one end by a range of buildings that act as port and barrier to the flooding Chixoy River (Woodfill et al. 2018). Today the fields of this region abound with chilis, fruit trees, and high yields of corn due to the volcanic soil deposited by the Chixoy during its annual floods (see also Dillon 1979; Woodfill 2020; Woodfill et al. 2015). This agricultural fertility was and continues to be an important addition to the trade economy of the area.

Along the banks of the Chixoy River and its immediate tributaries, facing the southern slopes of the salt dome, lie several clusters of impressive monumental architecture. These localities, documented by two earlier archaeological projects (Dillon 1979; Garrido 2008; Leal Rodas 2006), are known simply by the letters "A" through "G." These assemblages feature several reservoirs, monumental stairways, and a heavily modified landscape optimal for agricultural exploitation just meters away from the brine resources and viewshed dominance of the salt dome. These groups are at once connected to the salt production area, the monumental architecture of the Pie de Cerros area, and the southwestern extent of the Tiera Blanca zone.

Within the deeply inundated and marshy region where the enormous Salinas swamp and freshwater drainages from the eastern rises of the Nueve Cerros range combine, several large plazas are arranged on high basal platforms. Referred to as Oxib' Pek, these elevated architectural compounds are centrally located to exploit the surrounding wetland resources.

The Nueve Cerros urban sprawl spreads along over 10 km of both banks of the Chixoy/Salinas River, with architectural groups clustering around natural ports and oxbow lakes. While most of the architecture is found atop high ground above the flood zone, there is limited habitation in lower areas (e.g., Woodfill et al. 2014).

Economics

The brine from the Tortugas salt dome was the foundation upon which the Nueve Cerros economy was built. Most of the salt industry was based on

boiling down the brine into cylinders or round, flat cakes using single-use ceramic molds. They were placed, up to seven at a time, atop a 3 m long stuccoed oven and replenished with brine until they reached the desired thickness. The molds were then broken to release the finished product (Dillon et al. 1988; Woodfill et al. 2015).

There was some processing that happened to the brine before it was cooked, however. The brine was initially gathered from the stream and poured into giant ceramic bowls with diameters approaching 2 m—among the largest ceramic objects in the precolumbian Americas. The wide opening allowed for the sun to begin to evaporate the water and thicken the brine, reducing the amount of time and firewood needed to create the solid cakes. The bowls also had a bolstered rim and a large flange, likely to allow a large piece of leather or other solid "lid" to be tied in place during a rainstorm. According to Martín Tovilla (1960), cornmeal was also added as a thickening agent during the seventeenth century.

The stream provided a virtually infinite supply of salt—one of the last people to formally boil down the brine there in the early twentieth century reported that he could have produced a quarter of a million metric tons a year, which was 25 times the consumption and almost 28 times the total production of salt in the Republic of Guatemala at that time (Andrews 1983:99; U.S. Department of Commerce 1917:712; Woodfill 2020).

Over 4,000 metric tons of salt are available per annum simply by periodically scraping the salt flats (Dillon et al. 1988; Woodfill et al. 2015; see Plate 3.1). But the Maya of Nueve Cerros were actively producing salt through boiling down brine in single-use ceramic molds (Figure 3.4a and 3.4b). As a result, the only practical factors limiting the amount of salt produced would have been firewood and demand. The former was partially mediated by the Classic salt producers, who used a variety of methods to thicken the brine before it was ladled into the mold. This included solar evaporation in the giant salt bowls that were adjacent to the ovens (Figure 3.4c) and leaching minerals from the salt-laden soils underlying the salt flats. They almost certainly created evaporating pools around the brine stream as well, although that has not yet been proven archaeologically.

As to the demand, Classic Maya salt merchants would have had the advantage of peddling a biological necessity that was rare in inland zones. Estimates for daily salt intake among the Maya ranges from 8 to 9.2 g per adult per day (Andrews 1980; Fenner and Wright 2014; Woodfill et al. 2015). While the residents of Nueve Cerros did not have a monopoly over the

Figure 3.4. Specialized tools associated with the Nueve Cerros salt industry: (*a*) roughly made conical mold; (*b*) large flat mold; (*c*) brine storage vessel (upside down, with Carlos Efraín Tox for scale); (*d*) overhang mano with associated metate; and (*e*) bifacial obsidian fish descalers recovered from excavations at neighborhoods throughout the site. Drawings by Carlos Efraín Tox, photos by Brent K. S. Woodfill (*c*) and Blanca Mijangos (*d*–*e*).

mineral, the Tortugas dome was the only noncoastal salt source in the Maya Lowlands, and the Chixoy/Salinas provided easy access to far-flung markets throughout the western Maya world. The site likely provided salt throughout the southwestern lowlands, with a reach that could have easily extended as far as Tikal, Calakmul, and Piedras Negras. There were two highland sources within 80 km, although Nueve Cerros was still in a geographically advantageous position to supply the Coban plateau and much of the middle Chixoy valley.

Salt was not only a commodity. It also served as an essential ingredient for a variety of other important goods for local consumption and interregional exchange. At Nueve Cerros, we have uncovered evidence of several derivative industries. Specialized salt grinders (Figure 3.4d), many of which still have traces of sodium chloride on their surfaces, are present in every neighborhood investigated to date in Nueve Cerros, including one over 10 km from the salt dome on the other side of the river (Dillon 1981). They consist of manos that are about 15 cm longer than their paired metate is wide, resulting in a broad, overhanging "handle" on either side that is easily grasped, a modification that is still used today in highland Guatemalan saltworks (Mijangos 2014; Woodfill 2020; Woodfill et al. 2015).

Each of the neighborhoods near the river has evidence of a large-scale fishing industry, which includes fishing weights and obsidian fish descalers (Figure 3.4e). Unlike standard prismatic blades, these tools could withstand more wear and tear because of the technique used to make them—knocking off the edges of bifaces—and because they were made of Jilotepeque obsidian, which was much stronger than the more common material from El Chayal (Woodfill 2020). The fish were descaled, salted, and dried in the sun before being shipped off and consumed.

In addition to the practically limitless availability of salt, the residents of Nueve Cerros were able to depend on a consistently high fish yield, which continues to this day. Project member Alexander Rivas, who is conducting his dissertation research on water management at the site, has documented the presence of multiple arroyos, weirs, and oxbow lakes along the river where today fish get trapped without human intervention. Villagers, especially those on the northern bank of the river, harvest about 10 kg of fish per person every time the river floods and subsides (Rivas and Odum 2019; Woodfill 2020; Woodfill et al. 2017).

Describing the region in 1620, Friar Gabriel Salazar (2000:44) noted that "there are different fish that come upstream from the sea and on the left side

nine hills they call Bolotenuz [*sic*] where there are salty waters, from which they make some salt." Brian Dillon (1981) reports that the Camela Lagoon, located a few kilometers downriver from the Nueve Cerros site core, was one of the best fishing spots in the Republic of Guatemala in the 1970s, and proposes that the adjacent monumental architecture could have been constructed to control access to it (for an example of this same pattern in the Amazon, see Schaan 2013), although it is currently unclear whether this was an oxbow lake, part of the main course of the river, or dry land during its occupation in the Late Classic period.

In order to process the fish at such a large scale, it seems that the residents of Nueve Cerros imported and used the lion's share of obsidian from Jilotepeque—a sturdier material than that from the more popular Chayal source—during the Classic period. This could help to explain the sudden drop in its importation into the lowlands that has befuddled archaeologists for decades (e.g., Braswell 2002; Andrieu personal communication to Woodfill 2016).

Farther away from the river, other cottage industries sprung up to take advantage of the large amounts of salt, as evinced by the same specialized salt grinders; the most likely commodities produced there were dried meat and dyed textiles, although this is still a preliminary proposal awaiting further investigation.

Beyond the salt industry, Nueve Cerros was and continues to be important for its agricultural potential. At the time of the Spanish conquest, the neighboring Maya in the highlands depended upon the Akalaha and Lakandon who occupied the region for cacao and achiote as well as cotton and vanilla (Caso Barrera and Aliphat Fernández 2006a; van Akkeren 2012). Salazar (2000:52) again waxed poetic about the natural bounty of the Nueve Cerros region in 1620, stating:

> There are nine hills, and next to them are many brines where they make salt. It is flat land and very solid, through which have passed Indians and Spaniards, and is known by all of those of the Verapaz. . . . They all swore that it is most beautiful and fertile, and that there are forests of cacao and achiote without owners.

By the time this had been written, the Akalaha had been removed from their homeland on the south side of the river to Coban after a failed rebellion (Bassie-Sweet et al. 2015; Remesal 1932:174; van Akkeren 2010; Woodfill 2020), and it is unclear if these groves belonged to them, the neighboring

Lakandon or Q'eqchi', or were simply feral trees descended from those planted by the Classic period farmers.

Finally, the extant river traffic and the presence of so many merchants already visiting Nueve Cerros opened the way for other industries based on refining imported raw materials from Highland Guatemala and Chiapas. This list included lithics like jade and obsidian, although never to the scale of Cancuen (Andrieu et al. 2014; Demarest 2013; Demarest et al. 2008, 2013; Woodfill et al. 2015).

Politics

The salt source was an important resource politically as well as economically—it was a lucrative industry based on refining a mineral found in a tightly restricted geographic zone. The brine stream flows for several kilometers between the salt springs on the western slope of the Tortugas salt dome and its confluence with the Chixoy/Salinas River. However, it quickly becomes diluted by water from multiple freshwater streams and springs, which limits productivity to a segment that stretches less than 1 km from the dome.

The technology to produce salt cakes was simple and required no specialized knowledge, but because the mineral was highly restricted geographically, it was easy for the elite to control access to the salt itself. Archaeological investigations in the saltworks to date indicate that this production occurred at a massive scale, with evidence of up to nearly a billion metric tons produced by the end of the Classic period (Woodfill 2020). Interestingly, the workshops under investigation by Dillon are located next to administrative structures containing tombs of important individuals who were buried with jade and other extravagant offerings (Dillon et al. 1985; Woodfill 2020; Woodfill et al. 2015). Not only were the workshops attached to elite structures with elite tombs, the saltworks and the salt flats are adjacent to one of the largest and densest concentrations of monumental elite architecture, the Pie de Cerros group. As a result, it appears almost certain that salt production was conducted under the auspices of the elite class.

Once it was produced, however, the salt cakes were distributed in large quantities throughout every neighborhood at the site, explaining the preponderance of "overhang" manos and associated metates that were spread throughout the site. Unlike the salt itself, however, the secondary products made in these households appear to have been made without elite

oversight. By controlling the production of and access to this one essential ingredient, the Nueve Cerros elite would have made themselves a necessary partner to almost every economic activity that occurred in the region.

Religion

Hills and caves are sacred throughout Mesoamerica, and investigations since 2010 have documented multiple shrines atop and inside of the Nueve Cerros Ridge (Schwab 2013; Schwab et al. 2012; Woodfill 2019). This ridge has been a central part of the region's identity since before the arrival of the Spaniards—the earliest Spanish references to the salt source refer to it as B'olontewitz—"Nine Hills" (Salazar 2000; Tovilla 1960). The same B'olontewitz or its colonial Yukatek variant, Bolonpel Uiitz, appear in Classic- and colonial-period texts throughout the Maya world; while it is not always clear if they are all related to this specific ridge, at least some references are. The *Book of Chilam Balam of Chumayel*, for example, states that one of the four principal families of Chichen Itza was originally from Nueve Cerros (Roys 1933:64; Schwab et al. 2012; van Akkeren 2012). Since both Nueve Cerros and Chichen Itza were closely tied to the salt trade in different periods, this was a powerful source of authority and prestige indeed.

Although Nueve Cerros does contain multiple oratories, ball courts, and at least one E-Group, the most important ritual loci appear to have been caves and mountaintops in the Nueve Cerros Ridge. This emphasis on the natural landscape parallels the pattern found at Cancuen, which Demarest and colleagues (Chapter 12, this volume) argue places its residents in a cultural tradition that straddles both sides of the highland–lowland divide.

The ridge continued to be an important focus for ritual activity even after the city was abandoned for the people who came to boil brine on the flats below. The most dramatic example of this is found in San Juan Hill. It is a pyramidal limestone feature adjacent to the Nueve Cerros Ridge that contains two caves and a rock shelter (Figure 3.5g–i), all of which contain carved humanoid faces as well as ritual detritus and other evidence of preconquest use. The largest cave, San Juan #1, is a large, open pass-through with a high, southern entrance connected via a steep slope to a lower one to the north. Around the end of the fourteenth century, the Maya built a ritual stage atop the slope that was used for multiple ceremonies. Unlike typical cave stages (Brady 1989; Helmke and Awe 1998; Woodfill 2010), this

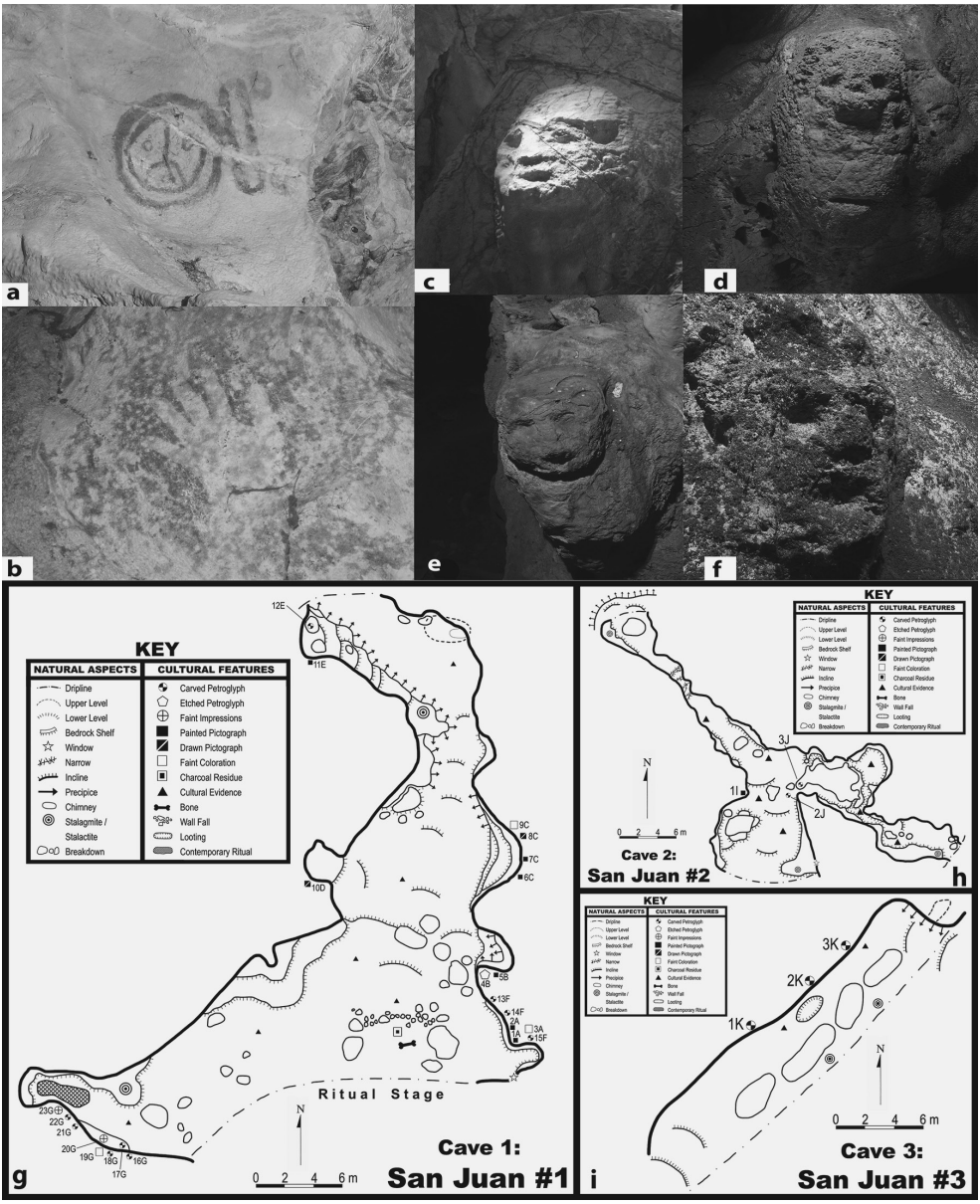

Figure 3.5. San Juan caves and selected rock art: (*a*) inverse 7 Ajaw glyph; (*b*) negative handprint; (*c–f*) carved humanoid faces; (*g*) Cave #1; (*h*) Cave #2; (*i*) Cave #3. Photos by Matt Oliphant (*a*, *d–f*) and Charlie Savvas (*b–c*); maps by Luis F. Luin after original by Gregory Schwab.

one faces inward, meaning the audience would have congregated near the northern entrance instead of on the southern foot of the hill. The lower entrance was wide, brightly lit, and only a few meters above the valley floor, all of which made it an easy place to bring in the audience to observe the ceremony in a dramatic and unique locale.

The ritual experience was amplified through the use of rock art for both audience and participant. The walls downslope from the stage were painted with black and red depictions of multiple individuals for the benefit of the former while, for the latter, multiple hominoid visages (see Figure 3.5c–f and Plate 3.4) faced toward the stage. All of this artwork would have manifested the supernaturals participating in and observing the ceremony. Additional evidence of earlier ceremonies was present above the stage—a negative handprint in red (see Figure 3.5b) and a partial calendrical glyph, a mirror-image "7 Ajaw" that likely was used to commemorate an earlier period ending (see Figure 3.5a; Woodfill 2019; see also Grube et al. 1999; Hammond et al. 1999).

While the public was able to observe ceremonies on the ritual stage, the entire cave-hill complex included one additional cave as well as a rockshelter. The lowest rockshelter, San Juan #3, is the location of the first faces one would observe and is found on the way up the slope to the high southern entrance. Ritual practitioners could continue up beyond Cave #1 to San Juan #2, located above it but still accessible on the same southern slope. This cave was a smaller, more restricted labyrinth with some dark zone and multiple additional faces. The ability to travel among all three spaces that are connected by their physical proximity, their location within the same geographic feature, and the shared rock art program makes it likely that they were all used for a ritual procession by local or regional elite in a manner similar to that described by Holley Moyes in the Chapter 15 of this volume.

Natural, Constructed, and Synthetic Monumentality

The premise of this book is "how the Maya shaped their world" (see Canuto et al., Chapter 1 this volume). There are multiple ways to understand monumentality and "monumental" landscapes, even in the relatively flat Maya Lowlands. Nearby sites like Dos Pilas oriented structures to caves and springs and placed palaces atop both hills and caves (Brady et al. 1997). Aguateca incorporated several deep ravines into the urban layout (Ishihara 2007), and the occupants of Raxruha Viejo built palaces and a

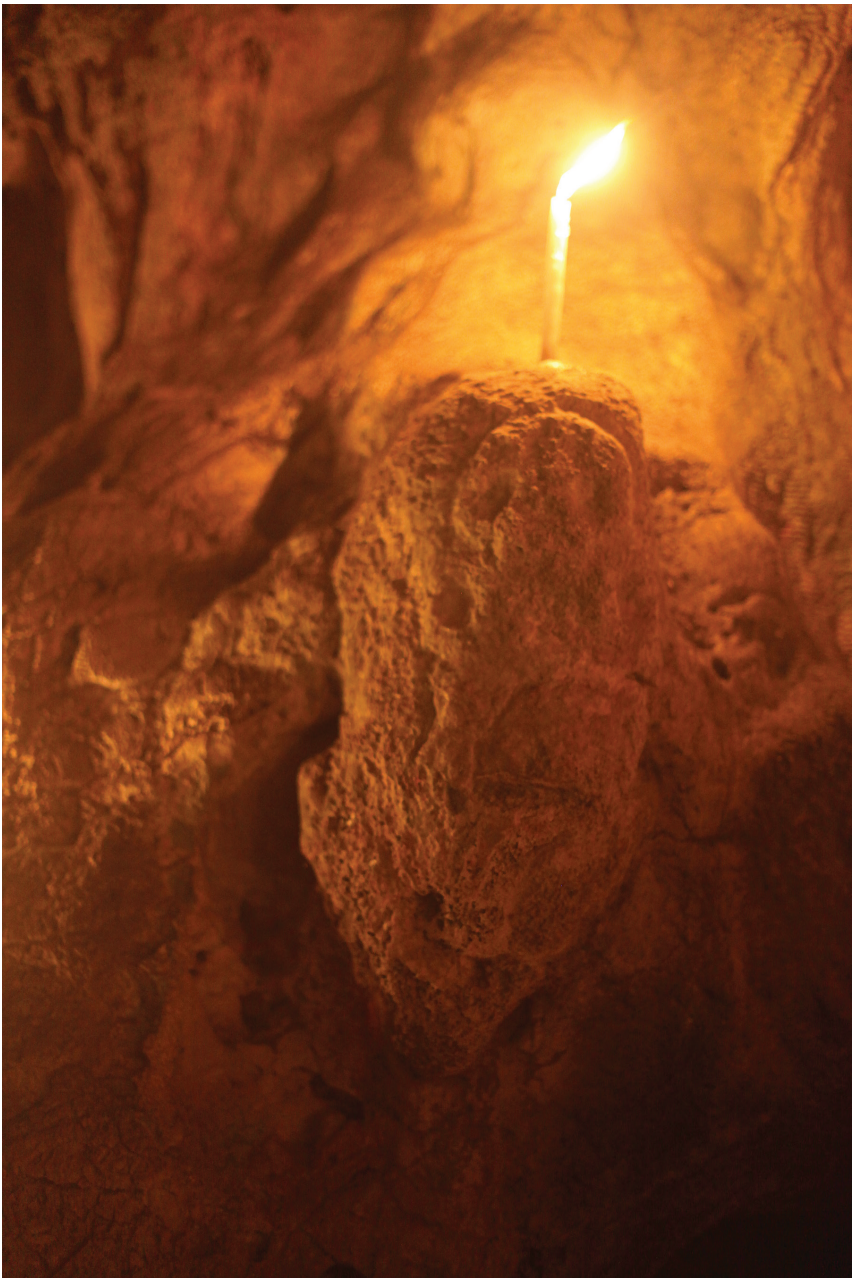

Plate 3.4. Candle placed atop a simple carved face with skull headdress at the conclusion of a 2011 planting ceremony (photo by Brent K. S. Woodfill).

stela-topped platform atop large karst hills and outcrops (Andrieu and Sion 2016; O'Mansky 2003; Woodfill 2010). Throughout the Maya world, the city planners of myriad sites incorporated hillslopes, caves, mountains, rivers, and cenotes into their urban design (e.g., Brady and Ashmore 1999; Brady et al. 1997; Smith 1955; Spenard 2014).

At Nueve Cerros, there are examples of both natural and constructed monumentality—the looming geologic scale of the Nueve Cerros Ridge and the Tortugas salt dome, and the human-made palaces, ball courts, and E-Group. However, here as elsewhere, they often work in tandem to create a synthetic monumental landscape that is both natural and constructed. The saltworks (see Figure 3.2) blend together architectural and geologic features to augment each—the brine stream cuts through the platform but is forced into a straight channel, similar to another modified streams and waterways at Nueve Cerros and at other Mesoamerican cities like Cancuen (Demarest 2013), Palenque (French 2006), and Teotihuacan (Cowgill 2015). The front and principal parts of the platform were obviously made by humans to conform to human conceptions of utility and aesthetics—flat, stepped, and angular—but it is currently impossible to tell without significant excavation where the platform ended and the salt dome began.

The Nueve Cerros Ridge was also modified by and tied to the city's architectural program. Several of the peaks were topped with hilltop shrines that provided a view of the salt dome, salt flats, great swamp, and the Pie de Cerros group below. The central ball court (see Figure 3.3) was, as described above, located in a small valley raised over a meter with a modified slope that would have channeled runoff rainwater into an adjacent *aguada*, and in order to access the ball court it would have been necessary to cross over an artificially straightened freshwater stream. The natural environment of the San Juan caves (see Figure 3.5) was enhanced by rock carvings, paintings, and a roughly made ritual platform.

One notable architectural idiosyncrasy at Nueve Cerros is the almost total lack of stone architecture at the site. While the residents typically opted for clay architecture with sporadic, lightly modified stones for steps and slopes, there are a few notable exceptions. The structures of the central ball court and the hilltop shrines are all made of cut stone with rubble fill. There are a few examples of megalithic slabs being incorporated into structures in the Pie de Cerros neighborhood and the saltworks—the ball court alley is lined with stones that are up to a meter tall; others of a similar size underlie the truncated platform of the nearby triadic structure. Smaller stones were used to create cists and internal tombs in and around the saltworks.

Each of these contexts is special, and it is likely that the stone fill and masonry slabs were intentional and meaningful, tying them physically (and often, but not always, visibly) to the ridge that provided the raw material. This is reminiscent of the "nibbled masonry" of the Inka (Dean 2010), in which large stones were carried at times great distances into an Inka administrative center and fit together in intricate patterns to show Inka dominion over the land and the living landscape. Here it is probable that the structures, tombs, and cists made of stone mined from the ridge were considered an extension of it, unlike the clay structures that erupted out of and are currently melting back into the muddy floodplain. This is part of an old tradition at the site—a speleothem from a nearby cave was placed atop the natural ground in the ball court valley during the Preclassic before it was raised up (Woodfill et al. 2011).

Conclusions

Landscape is key to understanding almost every aspect of the lives of the ancient residents of Salinas de los Nueve Cerros and largely determined the ways they were connected to the rest of the Maya world. While they depended upon the significant demand for salt, cacao, achiote, and highland–lowland exchange, these commodities have been replaced by others in high demand in the contemporary world system. Today national and global demands have shifted to petroleum, hydroelectricity, African palm oil, drug trafficking, and the antiquities trade, and the region has attracted new residents, businesses, and investments.

While the resources are different, the variety of possible extractive commodities and the land's natural fertility have played into every stage of the history of the region. The residents of Nueve Cerros were able to turn the economic potential to their benefit during the majority of the city's history, but after it collapsed, the Akalaha Ch'ol who dominated the area in the Postclassic proved less successful at maintaining their stronghold. The Spanish, Q'eqchi', and Lakandon all set their sights on the salt source. After the Akalaha were resettled twice—first in a reduction closer to the highlands and again after the 1555 ambush and murder of the Spanish friar Domingo de Vico, to a neighborhood of Coban—they effectively lost their claim to it. During the seventeenth century, the Lakandon effectively took the salt source for themselves (Tovilla 1960; van Akkeren 2012; Woodfill 2019) as the Spaniards ramped up interest in a formal conquest of the lowlands.

Friar Francisco Morán (2000:155) made a dramatic case to the Spanish crown for such a conquest in the mid-seventeenth century:

> These salt deposits were held tyrannically by the Ahitzas [*sic*], who took them from those Christian Indians. . . . [The] enemy pagans took the salt deposits and kept the remaining lands very poor, for they had the cotton, cacao, achiote, chile, hunting, and fish harvested from this land when it was at peace as well as the salt deposits. Those of the Verapaz are in such need of the salt that for lack of it, they go fifty leagues distant from their houses to Guatemala.

The actual reoccupation of the region did not occur for another 300 years and was led by the descendants of the Q'eqchi', the Spaniards' Maya allies. Their tenure was short-lived, however. The new settlements date to the 1970s and early 1980s, just as the Guatemalan military made new inroads into the region to protect national and international economic interests, specifically oil. In the twenty-first century, a variety of transnational businesses are leading the charge to recolonize the area, a list that includes Goldman Sachs, Unilever, Carlyle Group, Solel Boneh, and the Los Zetas (Dudley 2011; Grandia 2012:167; Rubio Castañeda 2017; Solano 2012; Wooodfill 2019).

Local landscape was not simple destiny for the ancient Maya, but it was a highly influential factor in their lives and larger social institutions. This book and the conference that it sprung out of examine how the Maya shaped their world, and they did so in extraordinary ways. But world shaped the Maya in significant ways too. The mountains, valleys, hydrology, soil, and minerals present in the Nueve Cerros region and its hinterlands all presented unique benefits and challenges, and they were consistently offset, enhanced, modified, taken advantage of, or ignored according to the technological, cultural, and economic idiosyncrasies of Maya civilization throughout history.

Acknowledgments

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4

Ritual Practice, Urbanization, and Sociopolitical Organization at Preclassic Ceibal, Guatemala

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Investigations at the Maya site of Ceibal, supported by the Alphawood Foundation, have provided significant information on the history of construction, use, and abandonment of public ceremonial complexes in the site epicenter and outlying minor temples, allowing us to explore the relationships between ritual practices, early social complexity and city planning during the Preclassic period (ca. 1000 BCE–175 CE). We propose that local communities formed around minor temples during the Late and Terminal Preclassic periods (ca. 350 BCE–175 CE), as the site grew into an urban center. Although smaller than their counterparts in the epicenter, the temples are monumental in scale and required considerable communal efforts to construct and maintain. These imposing structures may have been the physical and ideological focus of people living around them, helping to foster local group identities through time.

Our chapter opens with a discussion about urbanization, focusing more specifically on the social groups that formed at levels between the household and the city. Although these intermediate groups tend to be spatially defined in most urban settings, they are more difficult to differentiate in dispersed settlements like those of the ancient Maya. We therefore draw on lidar data and Geographical Information Systems (GIS) modeling to identify the potential spatial dimensions of midlevel groups and explore whether they were associated with minor temples. While geospatial analyses provide a synchronic evaluation of surface settlement, our detailed understanding of occupation patterns over an extensive sample area allows

us to study urban growth, monumentality, and local community formation through time. Overall, the evidence suggests that temple construction and ritual practices were central to community building from the foundation of Ceibal and were a key consideration in early urban planning.

Urbanization and Local Communities

This study is concerned with urbanization, or the process of creating a city as people move from hinterland areas to a central place and adapt to a new way of life (Cowgill 2004; Fox 1977; Hutson 2016:12; M. L. Smith 2003:12–13). Michael Smith (2010:138) defines cities and urban centers as "places that serve as the setting for institutions and practices that affect a larger, regional hinterland" (see also Houk 2015:19–20; Hutson 2016; Yaeger 2003). Urbanization occurs as political, economic, or religious ideologies spread from an epicenter over a larger region, which fosters a "center-dominated ethos" among diverse populations and motivates immigration (M. L. Smith 2003:13). This process is tied to increasing social complexity and centralized political authority, although state-level organization is not necessary for cities to form and exist (Cowgill 2004; M. L. Smith 2003:12–15). While cities frequently emerge in connection with region-wide transformations, each develops within a particular temporal, spatial, and historical context and changes through time to suit the needs of the residents. As such, there is considerable variation in urban form both within and across societies around the world (Chase et al. 1990; Hutson 2016; Marcus and Sabloff 2008; Smith, ed. 2003).

We investigate urbanization at Ceibal through the lens of generative planning theory (after Smith 2011) to explore how different social and spatial groups develop through bottom-up processes over time (Alexander et al. 1977; Hakim 2007; Smith 2010:150–151; Smith 2011:179–180). As Smith (2010:150–151; 2011:179) asserts, the residents of many ancient cities likely planned their own housing and maintained their own local facilities. This does not mean that organic city growth is disorderly or random but rather that different sectors are planned by local populations in accordance with shared social and cultural conventions (Alexander et al. 1977:4–5; Hakim 2007; Smith 2011:179). The result may be that residential and ceremonial architecture across the city are similar but not completely standardized, as would be expected of a centralized building program (e.g., Hakim 2007). Our focus on generative processes for Ceibal is not meant to imply that people in the center were not involved at some level in city planning. As

we show throughout this chapter, urbanization at Ceibal must have entailed negotiations among different sectors of society and influences from the center. A generative planning perspective is particularly relevant when investigating the development of neighborhoods or local communities in ancient urbanizing societies as it directs our attention to the decisions people made when settling in new areas and the effects of those decisions on patterns in the built environment.

Studying urban growth from a bottom-up perspective and focusing on outlying populations also allows us to explore heterarchical, rather than hierarchical, organization. Heterarchy, as defined by Carol Crumley (1995), is a form of social or political organization in which different elements are unranked or can be ranked in different ways. While this perspective does not deny the existence of hierarchies, it allows us to explore counterbalancing power relations among multiple people or groups in complex sociopolitical systems (Crumley 1987). The concept of heterarchy is particularly important when studying the emergence of social complexity and urbanization in the Maya Lowlands during the Preclassic period, before the institution of centralized rulership.

In all urbanized societies, social groups develop at levels between the household and city (Arnauld et al., eds. 2012; Canuto and Yaeger 2000; Smith 2010). Many important aspects of communal life are organized at these levels, which can foster solidarity among members of each group while unifying different segments of society into more cohesive social, political, and economic systems (M. L. Smith 2003:20–21; Smith and Novic 2012). The practices and social relations realized at this level carry important consequences for shaping, solidifying, and contesting the larger sociopolitical order.

Most scholars categorize intermediate groups as neighborhoods and districts (or wards), which are considered to be universal social and spatial units in all urbanized societies (Smith 2010; Smith and Novic 2012). In this chapter, however, we use the designation "local communities" (Barber 2013; Watanabe 1992) to refer to social groups associated with minor temples. A community is an ever-emergent, supra-household social institution comprising members who share a sense of belonging and ties to particular places (Barber 2013:167; Watanabe 1992; Yaeger and Canuto 2000:5–6). Communities are created through common beliefs (Cohen 1985), daily and extraordinary practices (Joyce and Hendon 2000), or similar modes of living (Murdock 1960), which foster a common identity among members and differentiate one group from others (Cohen 1985:44–58; Suttles

1972:35–37). Many communities can arise within, and in turn reinforce, a greater vision of cohesion across a larger region (Anderson 1991). The habitual interactions and continual outward expressions of local identities that constitute a community manifest patterns in the built environment, making it possible to study "instances of community" in archaeological settings (Barber 2013; Joyce and Hendon 2000; Yaeger and Canuto 2000:11–12). We believe local communities at Ceibal were distinct social and spatial units, similar to neighborhoods and districts. Studying these groups as communities further allows us to explore how they formed, how they were socially integrated, and how they changed through time.

Ritual, Community Building, and Urbanization

Scholars have long assessed the roles of ritual and religion in sociopolitical organization, community building, and urbanism in ancient Maya society (e.g., Ashmore and Sabloff 2002; Demarest 1992; Inomata 2006a; Ringle 1999; Sanders and Webster 1988). In many Maya polities, craft production and subsistence activities were undertaken at the household and local community levels (e.g., Foias and Bishop 2013; Freter 1996; Triadan 2000), which suggests that economic and political centralization was limited (cf., Aoyama 2001; Chase and Chase 1996). Rituals held in site cores may have played a significant role in promoting shared values and identities (e.g., Houston, Escobedo, Child, et al. 2003; Inomata 2006a). Ritual may have been central to structuring the social order, as it integrated religious, economic, and political life (e.g., Lucero 2003, 2006; Swenson 2011; Wells and Davis-Salazar 2007).

Many scholars have argued that rulers and subroyal elites drew power from appropriating and monopolizing ritual practices (e.g., Lucero 2003). However, subroyal elites and non-elites also performed rituals in domestic and public spaces in outlying areas (e.g., Burham and MacLellan 2014; Gonlin 2007; McAnany 1995; Tsukamoto et al. 2015). Ritual practices at all levels of society may have been key to fostering social cohesion while developing hierarchies in early Maya society. For some rituals, only a few specialists may have known how to perform them or had the ability to use symbolically charged objects. However, ritual can be resisted, negotiated, or reinvented, which leaves room for subordinate members to accept or question the authority of those who claim privileged knowledge (Bell 1992). During the shared experience of ritual, rigid social structures break down and instead promote a sense of solidarity, a process Victor Turner (1969)

refers to as *communitas*. In some cases, sharing ritual knowledge, rather than keeping it secret, may have been key to promoting social cohesion among different social groups. Constructing monumental, ceremonial architecture can also be central to this process, as people willingly participate in creating something that will be used for a greater purpose, even if access is ultimately restricted to few (Munson and Pinzón 2017; Pauketat and Alt 2003; Triadan et al. 2017).

Temples are located throughout residential areas in many Maya cities (e.g., Fry 1969; Pendergast 1981; Ringle 1999; Tourtellot 1988), which suggests that ritual was a key consideration in city planning. Many have argued that minor temples were physical, functional, or ideological centers of localized groups, serving as important integrative hubs in dispersed settlements (Iannone 2004; Munson and Pinzón 2017; Tourtellot et al. 2003). As discussed in more detail below, these monumental structures were built at regular intervals around the Ceibal's epicenter during the Late and Terminal Preclassic periods. The act of constructing the temples and participating in rituals in these new communal spaces may have fostered local identities and differentiated one group from others (Hendon 1999; Ringle 1999). At the same time, people also gathered in the Central Plaza for ceremonies, which enabled participants from different groups to share common experiences (Inomata 2006a).

Identifying Local Communities in Maya Settlements

Following traditional settlement pattern approaches (Ashmore, ed. 1981; Willey 1956), various archaeologists recognize neighborhoods, districts, and local communities as settlement clusters separated by natural or man-made topographic features (e.g., Arnauld et al. 2012; Bullard 1960; Fash 1983). In cases where zones are not delimited by empty space or natural features, some scholars have used distance measures to distinguish residential groups. The underlying assumption in these studies is that the distance between buildings correlates with the degree to which the people living in them interacted on a regular basis and, thus, how socially integrated they were (Kintz 1983; Lemmonier 2012; Peterson and Drennan 2005). In many Maya settlement studies, however, settlement appears to be continuous throughout the site, while some structures or patio groups are completely isolated. We must be careful not to impose artificial patterns on the built environment when relying on distance measures to identify different social groups. As Scott Hutson (2016) and others (e.g., Arnauld et al., eds. 2012)

have noted, boundaries between neighborhoods and other intermediate social units may have been blurry, which carries implications for understanding how these groups were organized and how they articulated with the larger city.

Measuring settlement density is another important method of identifying intermediate groups in urban landscapes. Using similar assumptions to those discussed above, density analyses may illustrate the ways in which settlement is clustered or zoned while also showing where and in what ways settlement becomes lighter between zones. Such patterns are arguably easier to see using GIS programs, which provide tools for assessing the relationships between natural and manmade features in a landscape (e.g., Fitzjohn 2007; Llobera 1996; Llobera et al. 2011). GIS is especially effective when combined with data from airborne light detection and ranging (lidar), which provides more accurate spatial information than ground survey alone. The use of GIS and lidar has been gaining traction in Maya archaeology (e.g., A. Chase et al. 2011; Chase, Chase, Awe . . . and Brown 2014; Inomata, Pinzón, Ranchos, et al. 2017; Inomata et al. 2018) and shows great potential for identifying different sociospatial groups across a landscape (e.g., Prufer and Thompson 2014). GIS allows archaeologists not only to study patterns in the built environment but also to explore how natural topography affected settlement.

Many researchers suggest that midlevel groups were organized around recurring architectural forms, such as temples or elite residences, which served as "focal nodes" for the nearby populations (see Ashmore 1981:51–54; Hutson 2016:80–86; see also Arnauld et al. 2012; Guderjan 2007; Kintz 1983; Lemmonier 2012; Tourtellot et al. 2003). The presence of focal nodes is particularly relevant from a community perspective since they may have served as venues for meaningful interactions that would have helped foster unity among the people living near them. Hutson (2016:80–86) suggests that if a special function building is located inside or on the edge of a settlement cluster, it may have served as an integrative hub for people living in the area, providing a good indicator that the cluster was a neighborhood or ward.

Many studies focus on surface settlement, which represents a palimpsest of occupation and not necessarily spatial patterns at one particular time. In this regard, data from intensive excavations, surface collection, and systematic test-pitting can provide detailed temporal data with which to explore diachronic settlement patterns.

Ceibal

Ceibal (also Seibal) is located on the Pasión River in the Petén District of Guatemala. The site sits on gently undulating upland on the edge of an escarpment overlooking the river (Figure 4.1). Researchers from Harvard University carried out the foundational Seibal Archaeological Project (Sabloff 1975; Smith 1982; Willey et al. 1975), which has made subsequent, targeted investigations possible. As part of Harvard's project, Gair Tourtellot (1988) surveyed and excavated select areas outside of Ceibal's epicenter and found numerous minor temples (see Bullard 1960; Iannone 2004; Munson 2012; Tourtellot 1988). Each consists of a ceremonial complex containing at least one pyramid, a plaza for gatherings, and an associated residential group. Domestic groups surround the ceremonial complexes, and most are located near water sources, such as *aguadas*, marshes, or *arroyos*, which may have been used for agricultural production (e.g., Akpinar-Ferrand et al. 2012; Scarborough 1996). This spatial arrangement is similar to descriptions of neighborhoods at other Maya centers (e.g., Arnauld et al. 2012; Lemmonier 2012). Tourtellot (1988:377, 381–383) proposed that each temple belonged to a collective of households headed by a local elite or priest. He found that many temples were constructed during the Late Preclassic period, a time of major growth for Ceibal.

Since 2005, following Harvard's groundbreaking research, the Ceibal-Petexbatun Archaeological Project has carried out extensive excavations in Ceibal's core (Groups A, C, and D) to investigate the origins of Maya civilization (Inomata et al. 2013; Inomata, MacLellan et al. 2015). Generous support from the Alphawood Foundation since 2012 has accelerated our research, allowing us to find the earliest constructions in the epicenter and to explore various complexes in outlying areas. Large areas of the Karinel Group (Unit 47), a residential platform to the west of Group A, were excavated to expose evidence of Middle Preclassic households (MacLellan et al. 2016). Five minor temple complexes and surrounding residential units, including the Jul (Unit 54), Amoch (temple Structure 1, Unit 4E-14, Unit 3, and Unit 3'), Muknal (temple Unit 4E-10 and Unit 4F-15), Pek (temple Unit 4G-4, Unit 4G-5, and Unit 4G-12), and Palacio (temple Unit 3H-1, Structure 3H-5, and Unit 3H-7) groups, were also systematically test-pitted to collect diachronic settlement data (see Figure 4.1). As a facet of the Ceibal Project, Jessica Munson (Munson and Pinzón 2017) investigated the satellite community of Caobal. Data from these areas provide detailed

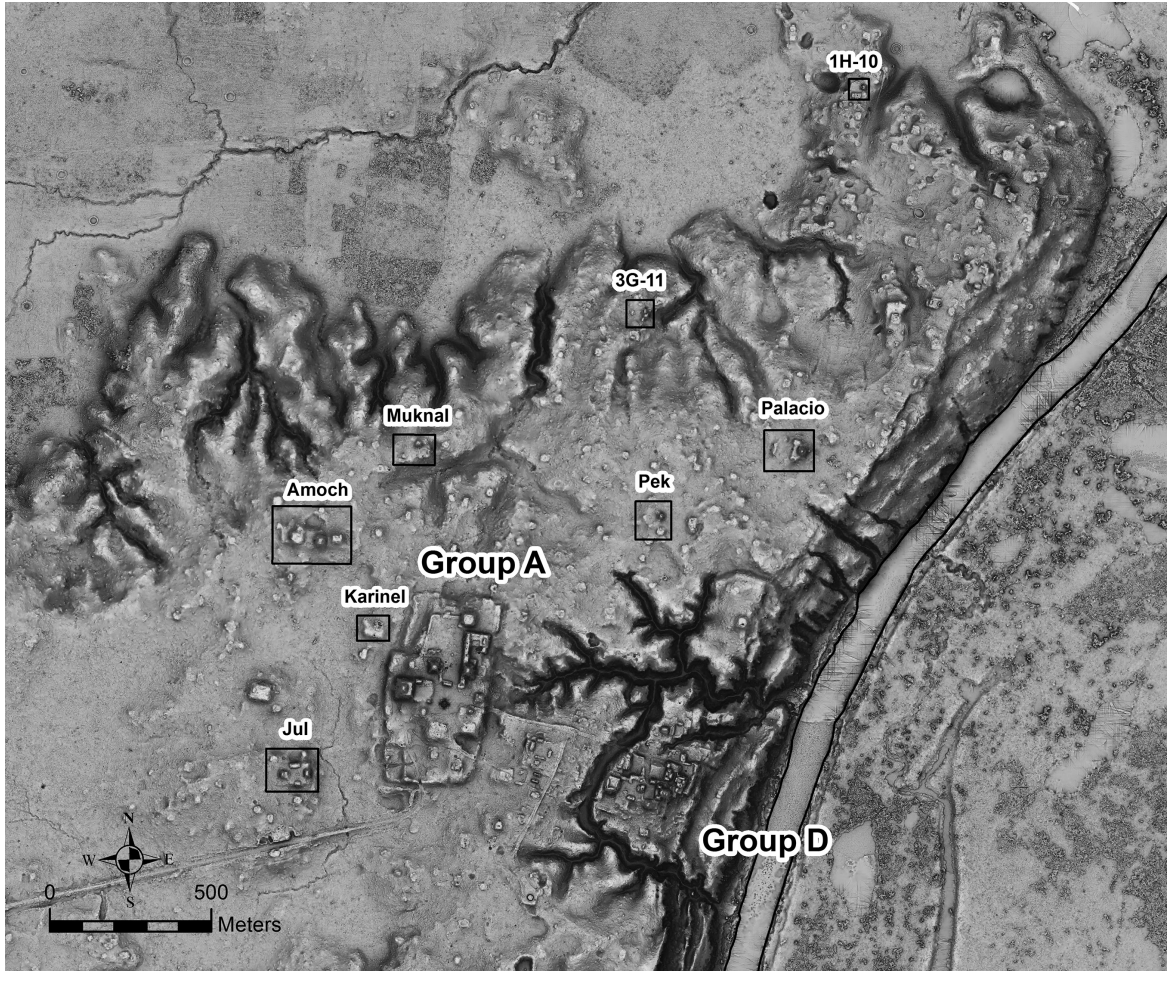

Figure 4.1. Map of Ceibal and groups discussed in text. Courtesy of the Ceibal-Petexbatun Archaeological Project.

Table 4.1. Ceramic chronology of Ceibal

Period	Ceibal Ceramic Phase	Date
Early Middle Preclassic	Real-Xe 1	1000–850 BCE
	Real-Xe 2	850–775 BCE
	Real-Xe 3	775–700 BCE
Late Middle Preclassic	Escoba-Mamom 1	700–600 BCE
	Escoba-Mamom 2	600–450 BCE
	Escoba-Mamom 3	450–350 BCE
Late Preclassic	Cantutse-Chicanel 1	350–300 BCE
	Cantutse-Chicanel 2	300–150 BCE
	Cantutse-Chicanel 3	150–75 BCE
Terminal Preclassic	Xate 1	75 BCE–50 CE
	Xate 2	50–125 CE
	Xate 3	125–175 CE
Early Classic	Junco-Tzakol 1	175–300 CE
	Junco-Tzakol 2	300–400 CE
	Junco-Tzakol 3	400–500 CE
	Junco-Tzakol 4	500–600 CE
Late Classic	Tepejilote-Tepeu 1	600–700 CE
	Tepejilote-Tepeu 2	700–750 CE
	Tepejilote-Tepeu 3	750–810 CE
Terminal Classic	Bayal	810–950 CE
Postclassic	Samat	1000–1200 CE

Sources: Inomata 2017; Inomata, Triadan, et al. 2017; Sabloff 1975.

information about the settlement history of Ceibal. Through careful stratigraphic control of excavations, analysis of pottery types and forms, and thorough radiocarbon dating, Takeshi Inomata has refined the ceramic chronology (Table 4.1) developed by Jeremy Sabloff (Inomata 2017; Sabloff 1975). We used this updated sequence to identify subtle changes in occupation through time.

Building on Tourtellot's survey, Munson (2005; Munson et al. 2006) incorporated geospatial data for outlying architectural groups into an ArcGIS database. This database has been augmented by a lidar survey carried out in 2015 in collaboration with National Center for Airborne Laser Mapping of the University of Houston (Inomata, Pinzón, Ranchos, et al. 2017). Following visual identification of architectural features and ground-truthing, we have conducted geospatial analyses to identify zoning patterns across the survey area.

Spatial Patterns

Using ArcGIS (10.4.1), we performed spatial analyses of architectural features identified in the lidar survey to explore settlement clustering across Ceibal. Since this study seeks to identify local communities in Ceibal's urban center, we focused on the density of architectural units (groups of associated buildings, see Tourtellot 1988) rather than individual structures. In this way we attempted to avoid overweighing residential complexes with many buildings. We also included standalone temples, structures that did not appear to be affiliated with others, and platforms that probably supported perishable superstructures. Thus, all architectural groups and isolated structures were represented. A separate feature class was made for public temple complexes to see how their distribution overlaid the results of the density analyses. This classification includes all major and minor pyramid complexes (those that accommodated larger crowds) but not household temples where access was presumably limited to the residents.

We used the kernel density tool in ArcMap to identify zones of concentrated settlement across the lidar-surveyed area. The analysis revealed an area of high settlement density measuring approximately 5.4 km^2 around Ceibal's civic-ceremonial epicenter (Figure 4.2; see also Inomata et al. 2018). We defined this area as the urban center of Ceibal. As Tourtellot (1988) observed, many outlying minor temples are located at regular intervals throughout the site, with a mean distance of 567 meters between them.

Next we performed another kernel density analysis of units in Ceibal's urban center to see more subtle variations in settlement density. The objectives were to identify residential zones and to see if a temple was located within each zone. The analysis revealed seven areas of concentrated settlement with varying degrees of density, most of which are associated with a temple complex (Figure 4.3). Group A was not identified as a densely settled area because it contains larger buildings and more open spaces than the rest of the site. The Karinel Group is not located in a settlement cluster, but its proximity to the Central Plaza suggests that it is most closely affiliated with Group A. Zone 1, a dense residential area north of the Central Plaza, does not have a temple, also likely due to its proximity to Group A.

Settlement appears to have been influenced by a combination of natural topography and association with ceremonial groups. Zone 2 consists mainly of Group D, an elite complex and the possible location of the royal palace during the Late Classic (Bazy and Inomata 2017; Smith 1982). This group is in a naturally defensible location atop a steep-sided hill next to

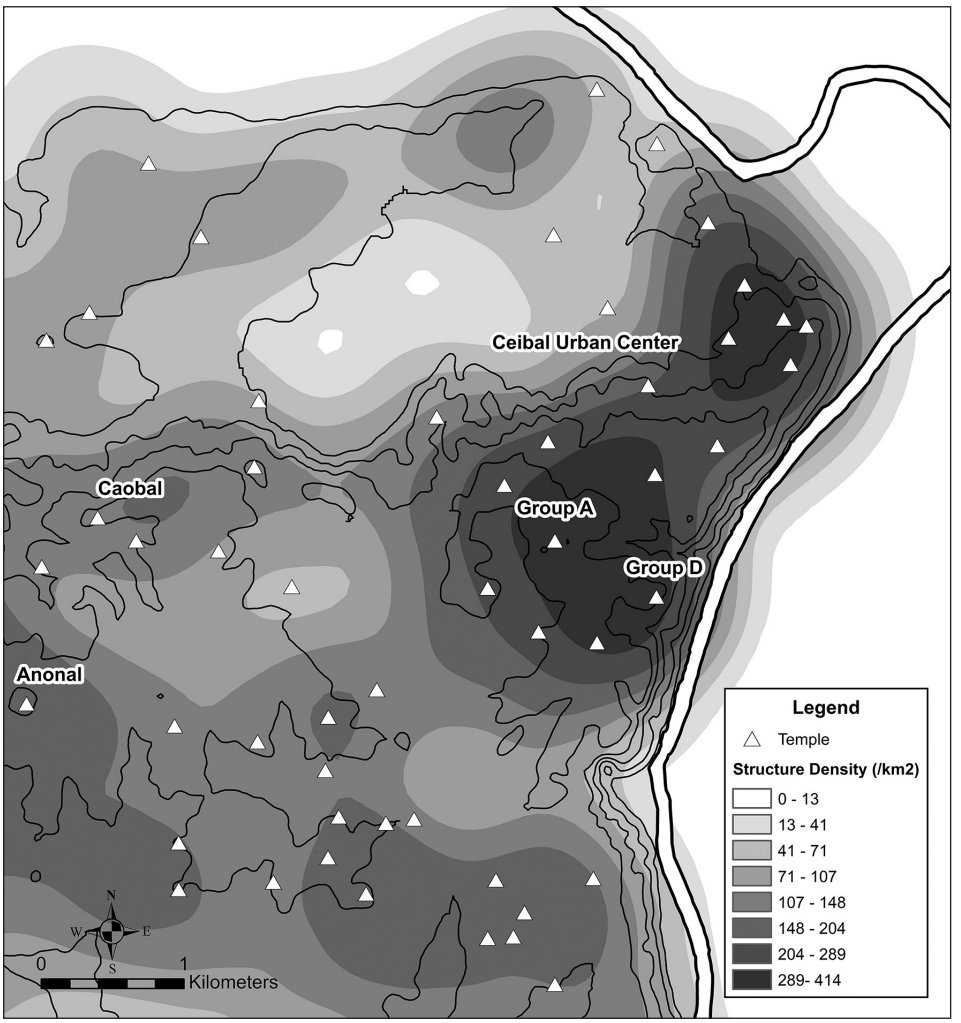

Figure 4.2. Results of kernel density analysis of structures in lidar survey area, showing Ceibal urban center as densest area in the region. See also Inomata et al. (2018). Courtesy of the Ceibal-Petexbatun Archaeological Project.

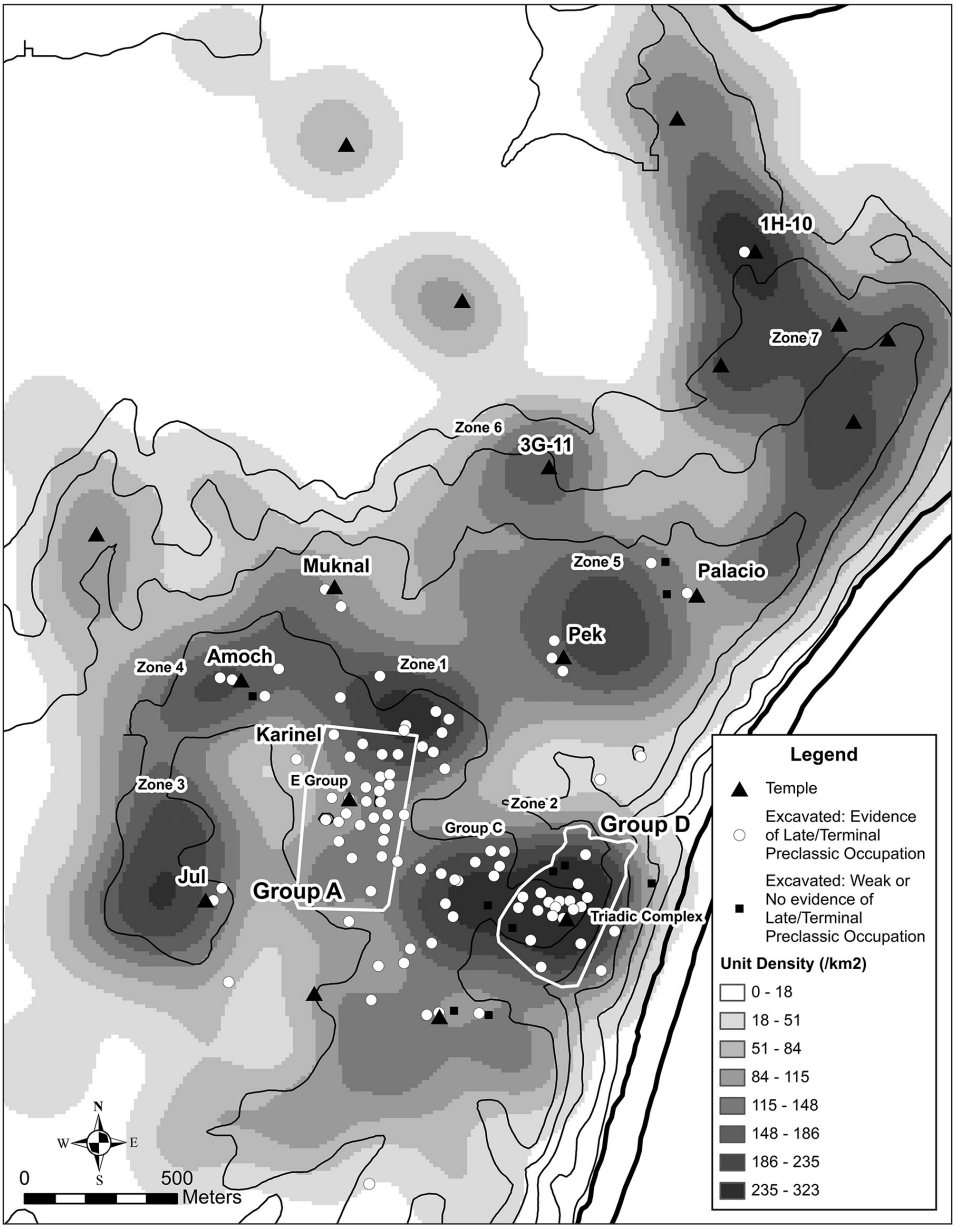

Figure 4.3. Results of kernel density analysis of units in Ceibal's urban center showing zones of dense settlement, and areas excavated by Harvard University (Smith 1982; Tourtellot 1988) and the Ceibal-Petexbatun Archaeological Project with evidence of Late or Terminal Preclassic occupation. Evidence of occupation includes Cantutse, Xate, and/or early Junco phase construction or deposits, or a significant amount of material from those phases mixed in later fills. Courtesy of the Ceibal-Petexbatun Archaeological Project.

the river, so it is not surprising that settlement is tightly clustered here. The only known triadic complex at Ceibal was built in Group D during the Terminal Preclassic (Inomata, Triadan, et al. 2017). Part of the zone also includes residential units along the causeways that connect Groups A and D. Settlement in Zone 3 sits on a gentle rise in the landscape, where people probably built their homes to avoid living in surrounding swampy areas. The Jul Group is on the southeastern edge of this zone. Zone 7 consists of tightly clustered groups built on the peninsula-like shelf at the northeast corner of the escarpment. Here many temples are scattered among residential units. This part of the site is reminiscent of Group D, located in a naturally defensible area.

Residential clustering around minor temples supports the hypothesis that they were focal nodes for local communities. Not all temples are located in settlement clusters, however. At the Muknal Group, which is located on the edge of the northern escarpment, nearby residential units are probably not nucleated around the temple due to the irregular landscape. Settlement around the Palacio Group is also relatively dispersed. The earliest evidence of occupation in the Palacio Group dates to the Junco 1 phase, a time of decline at Ceibal (Inomata, Triadan et al. 2017). It could be that the group was abandoned shortly after it was established, which is why nearby settlement is low. This group is also not far from Zone 5, where the Pek Group is located. The Pek Group predates the Palacio Group by many centuries (see below). The Pek temple may have served as the focal node for nearby populations during the Late Preclassic before it was abandoned in the Junco 1 phase, but the Palacio Group may have become the focus of this zone when it was reoccupied in the Late Classic.

Notably, settlement between some zones is sparser but continuous, and in some cases, there is no clear break in building density. These intermediate zones are also in higher and flatter areas of the landscape. People may have moved into these more favorable areas when space in established zones became limited. Tourtellot (1988:115) found that some of the structures in the area between Zone 1 and Zone 4 were occupied as early as the Escoba phase, which is well before the Amoch Group was established (see below). In this case, people may have slowly moved outward from Group A and then later nucleated around the Amoch complex after it was built. More work needs to be done to confirm this interpretation. In any case, these spatial patterns demonstrate that settlement planning in Maya cities was complex and irregular. Social boundaries may not always have been spatially defined in obvious ways.

These analyses are based on settlement visible on the surface, which represents a palimpsest of Preclassic and Classic occupation. However, approximately 88% of all areas that have been deeply excavated by Harvard University and the Ceibal Project have evidence of Late and/or Terminal Preclassic occupation, and approximately 84% of deeply excavated units outside the ceremonial core suggest there was Late and/or Terminal Preclassic occupation in those areas (see Figure 4.3). These findings suggest that spatial patterns may have been similar to those on the surface at the height of Late Preclassic occupation. This does not mean that the patterns represent the entire Late Preclassic, however. Our investigations reveal that different areas were gradually settled over the course of the Cantutse, Xate, and Junco 1 phases.

The Middle Preclassic Ceibal Community

The oldest part of Ceibal, the Central Plaza, dates to the Real 1 phase, when the earliest securely dated E-Group assemblage (a pyramid on the western side and a long platform on the eastern side of an open plaza) was carved out of the natural limestone (Inomata et al. 2013). With the possible exception of the A-24 platform, no excavated residential structures date as early as the E-Group (Inomata, MacLellan, et al. 2015; Willey et al. 1975). The earliest populations at Ceibal may have continued to live a relatively mobile lifestyle during the Real 1 and 2 phases. Caches consisting of greenstone objects, obsidian artifacts, and pottery were repeatedly deposited along the central axis of the E-Group throughout the Middle Preclassic (Aoyama et al. 2017; Inomata, MacLellan, and Burham 2015). It is clear that this ceremonial center did not develop out of a preexisting village and that ritual specialists were present at the time of Ceibal's foundation. These specialists may have had an elevated status during the site's early history (Triadan et al. 2017). The ceremonies performed in the E-Group plaza throughout the Middle Preclassic must have been important to creating the early Ceibal community.

The first clear residential structures outside of Group A are in the Karinel Group and date to the Real 3 phase. Munson also found late Real phase occupation at Caobal (Munson and Pinzón 2017). In the late Real and early Escoba phases, occupation with recognizable archaeological traces was limited to Group A, the Karinel Group, and possibly Group C. Later, during the Escoba 3 phase, people began to settle permanently in areas farther outside of Group A, including the Jul Group (Inomata, MacLellan et al. 2015; Tourtellot 1988).

Interestingly, at this time domestic rituals had little in common with those performed in the Central Plaza. Excavations in the A-24 platform and the Karinel Group revealed multiple round structures built amid residential platforms during the Real 3 and Escoba phases (MacLellan et al. 2016; Triadan et al. 2017). These did not appear to support structures, indicating they were open. Scholars have suggested that Middle Preclassic round structures, found throughout the Maya Lowlands, were stages for performances, which played a major role in creating local group identities and differentiating households (Aimers et al. 2000; Hendon 2000; Powis 1996). While there are few domestic caches dating to the Middle Preclassic, there are no intrusive deposits with whole vessels, greenstone celts, or sacrificial burials like those found in the Central Plaza. It is clear that rites in domestic contexts were different from contemporaneous ritual deposits in public spaces.

Late and Terminal Preclassic Ceibal Communities

A profound shift occurred at the beginning of the Late Preclassic period, when people began to construct minor temple groups in outlying areas. Our investigations reveal that these groups were not constructed simultaneously and were not occupied contemporaneously. Excavations at the foot of the temple in the Pek Group suggest it was constructed by the Cantutse 1 phase. In contrast, the earliest plaza floors and excavated temple substructures in the Muknal and Amoch Groups date to the Cantutse 2/3 and 3 phases, respectively. The temples were modified various times until the end of the Xate or Junco 1 phase. Occupation at the Jul Group continued in the Cantutse and Xate phases, and early versions of the temples were possibly built at that time. Nearby residential units were built and occupied contemporaneously with their associated temple during the Cantutse, Xate, and Junco phases (Table 4.2).

Although the minor temples share many stylistic qualities, each is distinct (Figure 4.4). For example, while some complexes consist of winged pyramids facing west onto a plaza (e.g., Structure 4G-4 in the Pek Group and Structure 3G-11), they have slightly different orientations and vary in shape and size. Structure 4E-10 of the Muknal Group has a vague winged-pyramid layout, with flanking disconnected platforms, and faces south. In contrast, Structure 1 of the Amoch Group is a single pyramid (no flanking buildings) and is much larger than the others in the study, even rivaling the size of some pyramids in the center. Ranging from 5 to 10 m in height, the temples clearly required significant communal efforts to construct and

Table 4.2. Summary of minor temples and nearby residential units at Ceibal

Temple and Group Name	Temple Height	Estimated Temple Volume	Temple Construction History	Associated Residential Occupation
Structure 6E-6 (Jul Group)	6 m	~2347 m^3	Plaza: Escoba 3 through Xate. No construction (abandonment?) until Tepejilote (1?). Temple possibly first constructed in Cantutse, like others. Latest construction dates to Tepejilote 1. Bayal occupation in group.	Residential occupation in plaza area during Escoba 3. Area by Str. 54 occupied from Cantutse through Xate. Abandoned until Tepejilote and occupied until Bayal.
Structure 4G-4 (Pek Group)	6 m	~713 m^3	Chultun cut into bedrock under temple (residential?) contained purely Cantutse 1 phase materials. Materials in first construction of temple date to Cantutse 1. Temple remodeled over the Cantutse and Xate phases. Temple buried during Junco 1 and abandoned. Never rebuilt in Late Classic.	Unit 4G-5: earliest floor dates to Cantutse 2. Construction/occupation over the course of the Cantutse 3, Xate and Junco 1 phases. Abandoned after Junco 1 and reoccupied from Tepejilote to Bayal. Unit 4G-7: Earliest layers reached in excavation date to Cantutse 2–3. Area abandoned Junco 1, reoccupied Junco 4, Tepejilote (1 and 3?) and Bayal.
Structure 1 (Amoch Group)	9 m	~5356 m^3	First plaza floor dates to Cantutse 2 or 3. Temple underwent multiple modifications through late Xate. Temple buried during Junco 1, and never rebuilt.	Unit 4E-14: Constructed by late Cantutse (2 or 3), occupation continued through Junco 1. Abandoned Junco 1, reoccupied Junco 4 to Bayal, with possible decline during Tepejilote. Unit 3: Tourtellot found possible Escoba and Cantutse layers in patio. Unit 3: Purely Bayal.

Structure 4E-10 (Muknal Group)	6 m	~1242 m^3	Tourtellot found multiple construction episodes dating to Cantutse. Earliest floors at base of temple date to Cantutse 3, with construction during Xate. Temple buried during Junco (1?) and abandoned. Reused as burial mound in Late Classic.	Unit 4F-15: The earliest floors in patio date to Cantutse 3. Group likely occupied contemporaneously with temple and abandoned during Junco times. Reoccupied in Tepejilote 1–2, and Bayal.
Structure 3H-1 (Palacio Group)	10 m	~3469 m^3	Plaza: Earliest floor and platform date to Junco 1. Area abandoned after Junco 1 until Tepejilote 1. Excavations at base of temple reached a potential Preclassic (Junco?) construction. Temple built up during Tepejilote 1, 2, and 3 phases.	Structure 3H-5 (the palace): Bayal midden encountered behind palace. Palace was not excavated but was probably built in Tepejilote. Unit 3H-7: General Tepejilote phase ceramics found in earliest floors. Occupied until Bayal. No evidence of Preclassic occupation. Unit 3H-8: Tourtellot found Cantutse and Junco layers, and evidence of Tepejilote and Bayal occupation.
Structure 3G-11	5.8 m	~1218 m^3	Not excavated, but the style of the complex (a Cenote-type E-Group with an eastern winged pyramid) suggests the initial construction could date to the latter part of the Late Middle Preclassic or the beginning of the Late Preclassic period (see Inomata et al. 2018).	Not excavated.

Note: Temple heights were measured using the digital elevation model generated from lidar data, and temple volumes were calculated using the Surface Volume tool in ArcMap. The volume represents the final construction episode, not substructures. Tourtellot (1988:Table 13) calculated heights and volumes of some temples, which are comparable to the lidar data.

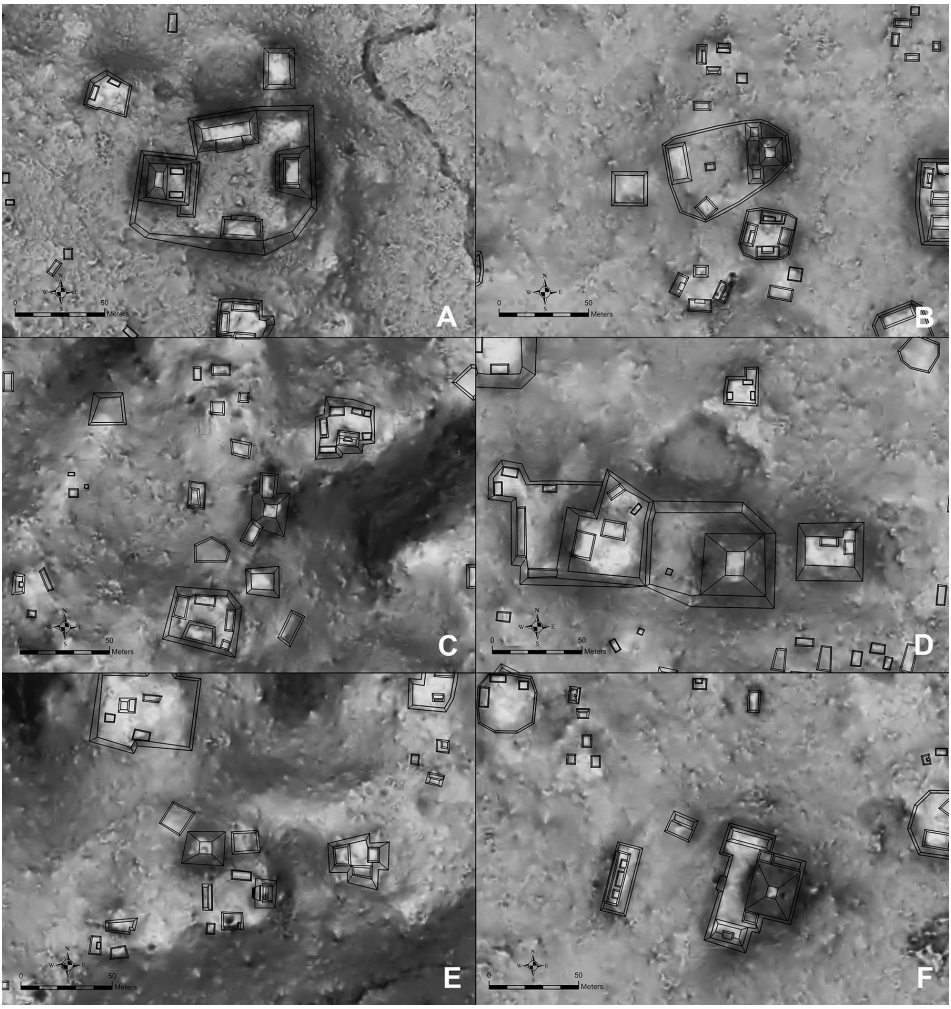

Figure 4.4. Examples of minor temple groups at Ceibal. (*A*) Jul Group; (*B*) Pek Group; (*C*) Unit 3G-11; (*D*) Amoch Group; (*E*) Muknal Group; and (*F*) Palacio Group. Courtesy of the Ceibal-Petexbatun Archaeological Project.

maintain (see Table 4.2). The temples were built with various construction techniques and materials, although always containing domestic refuse, likely from nearby residences. These differences suggest they were not constructed according to standardized conventions or by a central building program (see also Munson et al. 2006; Tourtellot 1988:376–377). Considering the evidence, we believe different groups of people, perhaps extended kin groups (Ringle 1999), built their own temples as they settled permanently in outlying areas of Ceibal.

Figure 4.5. Monument 2 in the façade of a Xate phase substructure of temple Structure 1, Amoch Group. Photo by T. Inomata, courtesy of the Ceibal-Petexbatun Archaeological Project.

In contrast to previous periods, rituals performed in these new communal ceremonial spaces, as well as in domestic contexts, were very similar to those conducted in the Central Plaza. Similar to other sites in the lowlands, the figurine tradition at Ceibal ended, and ritual practices began to focus on the caching of vessels and human sacrifices (e.g., Hammond, ed. 1991; Ringle 1999). These shifts occurred rapidly at the transition between the Escoba and Cantutse phases. At the Karinel Group, the use of open, circular platforms ended. A single human scapula and a single human pelvic bone dating to the Escoba-Cantutse transition were deposited in two different areas of the Karinel group, perhaps signaling new practices that involved dismemberment or curation of human remains. The earliest known intrusive cache of a ceramic vessel (Cache 175) at the Karinel Group also dates to this transitionary period.

In the Amoch Group, during the Cantutse 3 phase, the residents placed an uncarved limestone altar, Monument 2, along the central axis of an early substructure of Structure 1. The monument is associated with multiple construction episodes and was eventually incorporated into the façade of a later pyramid (Figure 4.5; Burham and MacLellan 2014). In a deep intrusion under the monument, the residents deposited a large Sierra Red vessel

with a plate over its mouth. A partial but articulated child burial (B147), possibly a human sacrifice, was placed inside.

The caching of dismembered human remains was also common in the Central Plaza of Ceibal and public spaces at other lowland sites at this time (e.g., Hammond et al. 1991; Inomata et al. 2010). Burial 147 from the Amoch Group, in particular, closely resembles Burial 127, excavated by Flory Pinzón, and Burials 111 and 112, excavated by Allison Minor, in the Central Plaza (Plate 4.1; Inomata et al. 2010; Inomata, MacLellan and Burham 2015). In all of these cases, the individuals were placed in large Sierra Red pots. It appears that human sacrifice, or at least postmortem treatment of human remains, became an important part of ceremonial life during the Late Preclassic. Similarities between Burial 147 and others from the Central Plaza show that some people in outlying temple groups had special knowledge of public rites.

This trend continued into the Terminal Preclassic. During the Xate phase, the residents of the Karinel Group deposited Cache 159, consisting of 18 ceramic bowls (Achiotes Unslipped and Sierra Red), obsidian blades, and stone discs, into a large rectangular intrusion in front of Structure 47. Like the vessels in similar Terminal Preclassic caches in the Central Plaza, the bowls were poorly fired, probably produced for ritual deposition. A child burial (B138) was placed higher in the same intrusion, apparently deposited as an offering. A similar, smaller cache (Cache 166) was found in the patio of Unit 4E-14 in the Amoch Group (see Burham and Estrada 2013). Similarities among Cache 159, Cache 166, and caches in the Central Plaza show strong connections between communal and domestic rituals (Plate 4.1).

Early Classic Decline

During the Early Classic Junco 1 phase, the residents of the Pek, Muknal, and Amoch Groups buried their local temples. Termination caches consisting of lip-to-lip plates were placed on top of Structure 4E-10 in the Muknal Group (Tourtellot 1988:148–153) and Structure 1 of the Amoch Group. Another cache consisting of an Ixcanrio polychrome bowl and part of a small, carved altar were deposited through the burial layer of Structure 4G-4 in the Pek Group, perhaps as part of the temple's termination. Nearby residential structures were abandoned at the same time as the temples. The Jul Group was abandoned by the end of the Xate phase, and the Palacio Group was abandoned during the Junco 1 phase. It is unclear whether the temples in these groups were buried, terminated, or left as they were. Excavations of

Plate 4.1. Examples of rituals in the Central Plaza and residential groups during Cantutse and Xate phases: (*A*) Burial 127 excavated in Central Plaza (photo by T. Inomata); (*B*) Burial 147 excavated from Amoch Group (photo by M. Burham); (*C*) Cache 159 excavated from the Karinel Group (photo by T. Inomata); (*D*) Cache 128 in Central Plaza (photo by T. Inomata). Courtesy of the Ceibal-Petexbatun Archaeological Project.

other peripheral groups suggest that all outlying areas were depopulated by the end of the Junco 1 phase. By burying the temples, outlying populations may have symbolically closed their sacred places before leaving. Many of the buried temples were not formally reconstructed during the Late Classic.

Discussion

Settlement clustering around minor temples in outlying areas of Ceibal suggests these monumental constructions were focal nodes for local communities during the Late and Terminal Preclassic periods. Systematic excavations further support this conclusion, revealing that most nearby residential units were occupied contemporaneously with the associated temple. Our excavations suggest that Ceibal grew progressively, beginning in the Escoba 3 phase outside of the site epicenter and spreading group by group through the Cantuse, Xate, and Junco 1 phases. Although many of the temples have similar orientations and layouts, each is distinct in size and was made with varying materials, probably quarried from nearby areas (Tourtellot 1988). Together this evidence suggests that local groups built their own temples while settling permanently in new areas. The construction of temples and subsequent participation in rituals may have been important to community building. Furthermore, as monumental constructions, the temples served as pervasive reminders of past actions and shared ideologies, helping to reinforce social ties among community members through time.

Ritual was important to community building from the very foundation of the site and was also a key consideration in Preclassic city planning. At the beginning of Ceibal's occupation, rituals performed in the E-Group may have motivated semimobile people to settle permanently in the area. While people gathered in the Central Plaza through time to attend public ceremonies, it appears that few people, who probably resided near the plaza (Triadan et al. 2017), had specialized knowledge of how to perform these rites, which may have elevated their status in society. While rituals in domestic contexts may have been expressions of local identities and functioned to differentiate households (MacLellan et al. 2016), public rituals helped integrate people into the Ceibal community in the face of increasing social differentiation.

In the Late Preclassic, ritual continued to be important to social integration as Ceibal became increasingly centralized, and populations permanently settled in more distant areas around the core. At this time, people continued to gather in the Central Plaza for public ceremonies. In contrast

to previous periods, however, ritual practices became similar across communal and domestic contexts (Inomata, MacLellan, and Burham 2015; Ringle 1999). Although it might be tempting to assume that rituals conducted in households and at minor temples were emulations of their public counterparts, practices at all levels of society informed, structured, and reinforced one another (Inomata, MacLellan, and Burham 2015). Our findings suggest that many ritual specialists, perhaps a heterarchical group of emerging elites, had intimate knowledge of public rituals and could have participated in the process of creating them. These individuals may have also been leaders of local communities developing throughout Ceibal (Ringle 1999).

The spread of minor temples and the homogenization of ritual practices at the onset of the Late Preclassic may reflect an adoption of centralized ideologies at the local community and household levels (Ringle 1999). Rituals performed at minor temples resembling ceremonies in the Central Plaza may have allowed people to more closely observe and participate in them, and in turn perform the same rites on their own in domestic settings. These smaller scale performances may have simultaneously fostered local group identities while also reinforcing a larger vision of social cohesion across the entire site. This would have been especially important as the settlement grew and populations could no longer interact face to face on a regular basis.

Minor temples were so important to local communities that many groups carefully and reverentially terminated their temples before leaving the city in the Junco 1 phase. Notably, most of the terminated temples were not rebuilt during the Late Classic, once Ceibal was reoccupied and after its royal dynasty was established.

Conclusion

Recent research of outlying areas of Ceibal suggests that religious ideology and monumentality played a key role in urbanization and local community formation throughout the Late and Terminal Preclassic periods. Our high-resolution understanding of occupation patterns at Ceibal shows that urban growth was gradual, occurring in a piecemeal fashion as people established sedentary groups in different areas at different times. Local communities formed through bottom-up processes, in which the construction of and ritual practices undertaken at minor temples fostered local group identities and a certain level of social cohesion. The members

of these groups lived in proximity and probably engaged in other routine interactions, which also helped reinforce social relationships. While ritual practices at outlying temples were important to local community formation, people also gathered in the site center for similar performances. These rituals provided occasions for participants to share common experiences and negotiate their differences, thus helping to integrate Ceibal's inhabitants into a larger society. The results of this study ultimately highlight the dynamic and complex relationships between core and periphery and show the importance of considering how interactions at intermediate levels of society affect city growth and sociopolitical organization.

Acknowledgments

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5

From Urban Core to Vacant Terrain

Defining the Heterotopia of Maya Monumental Landscapes at the Crossroads of the Middle Belize River Valley

ELEANOR HARRISON-BUCK, MARK D. WILLIS, CHESTER P. WALKER, SATORU MURATA, AND MARIEKA BROUWER BURG

> There are the scientific theories or the philosophical interpretations which explain why order exists in general, what universal law it obeys, what principle can account for it, and why this particular order has been established and not some other. But between these two regions, so distant from one another, lies a domain which, even though its role is mainly an intermediary one, is nonetheless fundamental: it is more confused, more obscure, and probably less easy to analyze.
>
> Michel Foucault, *The Order of Things*

In his preface to *The Order of Things* Michel Foucault (2005 [1970]) calls this less-understood domain a heterotopia, which stands in stark contrast to an ordered and well-understood social space, such as an urban core in an ancient Maya monumental landscape. Foucault's examples of a heterotopia encompass more aberrant spaces, like prisons and cemeteries, but the concept can usefully be applied in Maya settlement studies when discussing the relationships between the core and the fringes of the peri-urban landscape. Peri-urban refers to where the city meets the countryside. The latter is usually characterized as "rural" in a settlement classification system; it is where farming occurs and where smaller, isolated homesteads are found. Vacant terrain is sometimes conflated with rural, but the former is a less-defined classification as it lies between what can be definitively characterized as built or natural landscape. On the surface, these spaces appear different and even incompatible, but they can, in fact, have mutually contingent relationships with the more ordered urban spaces. Vacant terrain both separates

and connects the other more well-classified and ordered spaces and in this way shares elements of a heterotopia; it is both an entry and an exit, an opening and a closing off, a marking of transition in spatiotemporal intensities and discontinuities (Hurren 2018:34).

In this chapter we explore these "heterotopian" aspects of a monumental landscape, examining the fringes or outskirts of Saturday Creek, an ancient Maya urban center in the middle Belize River Valley. We examine some of the activities that the "vacant terrain" may have supported in the fringes of the peri-urban landscape, including wetland and orchard agriculture, and how these agrarian activities related with the neighboring urban core center of Saturday Creek and the nearby secondary centers of Hats Kaab and Chikin Chi'Ha (Figure 5.1). Our study relies on a combination of geospatial technologies, including publicly available satellite imagery and our surveys of the landscape using unmanned aerial vehicles (UAVs) as well as traditional pedestrian survey and total data station (TDS) mapping. We also rely on data we have gleaned from both our archaeological investigations and the ethnohistoric accounts from Spanish chroniclers of the sixteenth and seventeenth centuries. The Spanish recorded details about their journeys to the Maya communities in the middle Belize River Valley and their experience in the surrounding landscape. They describe this location as a crossroads, an entry point for those traveling south on an overland route, which traversed along a sandy pine ridge and through wetland swamps to finally reach the Belize River for travel up or down (west or east) on this riverine "highway."

Our study presented here contributes to a long history of applying innovative methods to settlement studies in the Belize River Valley, which continues to reshape our understanding of the Maya monumental landscape. We first provide a brief overview of this history of settlement pattern studies in the Belize River Valley and how geospatial technologies have revolutionized survey and mapping of ancient Maya monumental landscapes. In our case, archaeological findings are augmented by innovative, mixed geospatial methods, which combine UAV-derived photogrammetry with traditional field survey and mapping techniques. We present the results of our mapping efforts and compare these results to show the efficiency and effectiveness of mapping with drones in the tropics, particularly in areas under cultivation and in salvage circumstances. We discuss the settlement density and how the peri-urban settlement in this area was shaped around vacant terrain that, we argue, may have been used as an overland transportation corridor, as wetland agricultural fields, and as managed riparian

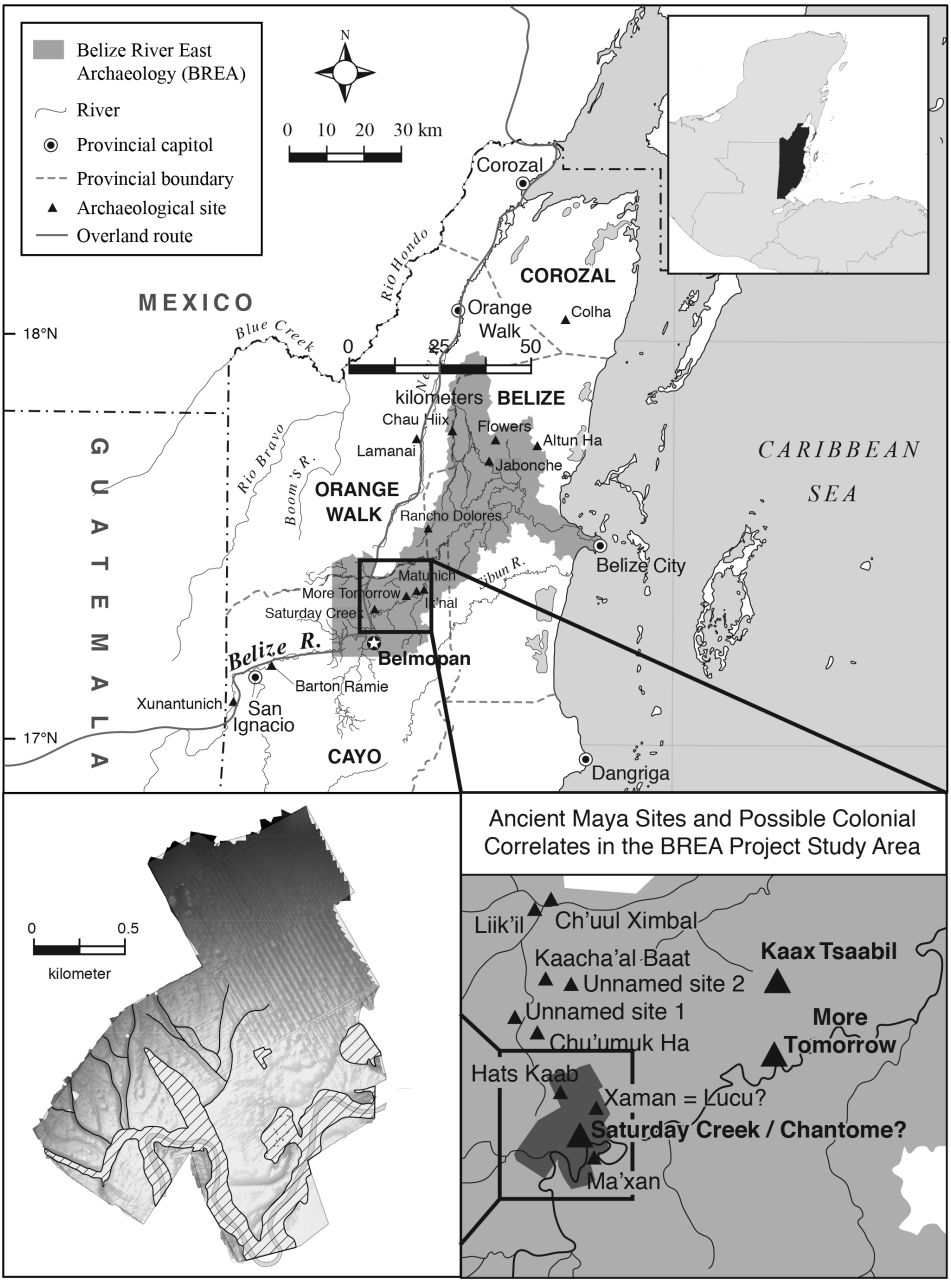


Figure 5.1. Map of the Belize River East Archaeology study area showing location of the 7 km^2 drone survey area (Area 1) and other sites in the middle Belize River Valley noted in the text (map prepared by M. Brouwer Burg).

forests with orchard agriculture. We examine the settlement density in relation to the potential for agricultural production in the region surveyed. Together our findings lend further support to the notion that the inhabitants of the middle Belize River Valley intensively managed their vacant terrain and were able to support a dense population aggregation from Preclassic through Spanish colonial times. They congregated at this location perhaps because of the environmental conditions and because it marked an important crossroads between east–west and north–south trade and communication networks.

Settlement Studies in the Middle Belize River Valley: Revolutionizing Mapping Technologies

Ancient Maya monumental landscapes have traditionally been defined based on the magnitude of the architectural complexes (e.g., pyramids, ball courts, E-Groups, and so forth) with little regard for the vacant terrain. These urban core centers represent the largest of the ancient Maya sites. Throughout most of the twentieth century, archaeologists focused their energies on mapping the architecture of these monumental urban cores and excavating their massive public works at site centers, like Tikal, in the so-called Maya heartland of northern Petén, Guatemala (Coe 1990; Harrison 1999; Jones 1996; Jones and Satterthwaite 1982; Tozzer 1911). Beginning in the early 1950s, Gordon Willey worked in Belize and became known for his pioneering work on "settlement pattern" studies in Maya archaeology, examining the areas not just in but also outside the urban core of monumental site centers. Willey (2004:16) called attention to the "total archaeological site layouts, not only temples, palaces, and public buildings, but residences, their natures, numbers, and distributions" at secondary centers, like Barton Ramie in the middle Belize River Valley (Willey 1965). Importantly, Willey applied innovative methods in his settlement studies of the 1950s, combining field surveys with aerial photography that enabled him to produce detailed maps of all of the archaeological features of the valley—a new kind of monumental landscape that included not just the site core but also its surrounding network of hinterland settlement.

More recent advances in geospatial technologies are now allowing archaeologists to study even greater monumental landscapes than ever imagined in the 1950s. Using a range of innovative geospatial technologies, we can map even larger and more complex spatial distributions of cultural remains across the landscape with a higher degree of accuracy and refinement

than was previously possible, reconstructing broad networks of interaction across space and through time. One such example of a geospatial technology that has revolutionized Maya settlement archaeology in the last decade is a remote sensing technology known as lidar (light detection and ranging). Lidar uses lasers to penetrate the forest cover and relies on specific filtering algorithms to provide detailed topographic maps of the landscape, capable of recording even the very subtlest of features (e.g., Canuto et al. 2018; Chase et al. 2012; Chase, Chase, Awe . . . and Brown 2014; A.S.Z. Chase et al. 2017; Garrison et al. 2019; Prufer et al. 2015; among others).

Lidar has traditionally been mounted on small planes, but more recently technicians have been using UAVs, otherwise known as drones, to perform lidar mapping. In open areas cleared of vegetation, lidar becomes unnecessary, but in these circumstances autonomous UAVs are still useful in the practice of archaeological survey and mapping when they are equipped with digital cameras. This relatively inexpensive geospatial tool is far more powerful than traditional aerial photography because it employs photogrammetric measurements to geo-reference the imagery and transform it into a digital elevation model (DEM). Photogrammetry offers a fast and effective method for mapping large aerial landscapes and reveals archaeological surface and subsurface features with potentially as much accuracy as lidar and in some cases even higher resolution (Casana et al. 2014; Gutiérrez and Searcy 2016; Harrison-Buck, Willis, and Walker 2016; Mozas-Calvache et al. 2012; Ortiz et al. 2013; Poirier et al. 2013; Wernke et al. 2014; Willis 2016; Willis and Murata 2018).

The Geospatial Survey of Saturday Creek and Its Hinterlands

The study presented here of the settlement in peri-urban, rural, and "vacant" landscapes surrounding the urban core of Saturday Creek attest to the power of photogrammetric mapping with drones, which has allowed the Belize River East Archaeology (BREA) project to map an expansive monumental landscape in a quick and efficient manner. In less than two days, Mark Willis and Chester Walker flew a drone across an area of Saturday Creek measuring roughly 7 km^2. Like many Maya sites, Saturday Creek supported dense peri-urban settlement and a sprawling rural community in the surrounding terrain. In many cases, archaeologists can only speculate on the population density as these smaller hamlets often are covered in thick jungle. Traditionally, these circumstances have made it difficult to

map every mound without years of investment in the systematic ground-truthing of the surrounding landscape by a designated survey and mapping team. Increasingly, sites in the jungle canopy have been at risk of being cleared, making settlement visible but vulnerable to destruction. This is the case for Saturday Creek.

While the Saturday Creek site core is in bush, the majority of the site's peri-urban and rural settlement is in open fields that were mechanically cleared of jungle vegetation between 10 and 25 years ago. Over the years farmers have systematically removed most of the large stones—the remnants of once-intact ancient Maya architecture—to avoid damage to their plows. In some cases, the farmers have decided that plowing around (rather than over) the larger mounds is easier, but in most cases the small- and medium-size mounds and a few of the larger structures have been victims of bulldozing and repeated seasonal plowing. The Hats Kaab E-Group is one of the monumental complexes that was bulldozed and has been repeatedly plowed over the years (Brouwer Burg et al. 2016; Runggaldier et al. 2013).

Beginning in 2014, following our drone survey, another 7,500 acres of adjacent land was cleared for a vast sugarcane plantation just north of Hats Kaab, which extends all the way to the south side of Labouring Creek. Parts of this newly cleared area, referred to as Area 2 (Plate 5.1), were the focus of intensive pedestrian survey and reconnaissance, both before and after clearing (Buck et al. 2013; Gantos 2015; Gantos and Buck 2018). In all of these cleared areas, mounds have been victims of extensive bulldozing and repeated plowing and are at high risk of further destruction. The repeated plowing and removal of stone shaves off more and more of the mounds in this area each year.

For this reason, one of BREA's primary aims has been to document the settlement before further damage to the mounds occurs (Brouwer Burg et al. 2016; Harrison-Buck, Willis, and Walker 2016). To do so, we have used a combination of survey techniques to map and record the structures in Areas 1 and 2. For Area 1, we used drones and a TDS for mapping as well as pedestrian survey to mark the locations of mounds using a hand-held Trimble GPS with submeter accuracy. Because Area 2 was cleared after our drone survey work took place in January 2014, we used strictly pedestrian survey of this area, creating sketch maps of mounds and recording their locations with the Trimble GPS. Because the area was newly cleared, it offered maximum visibility, and 100% of the mounds visible to the naked eye on the surface were recorded with the GPS (Gantos 2015; Gantos and Buck 2018). However, in the future we plan to fly Area 2 as it is clear that the

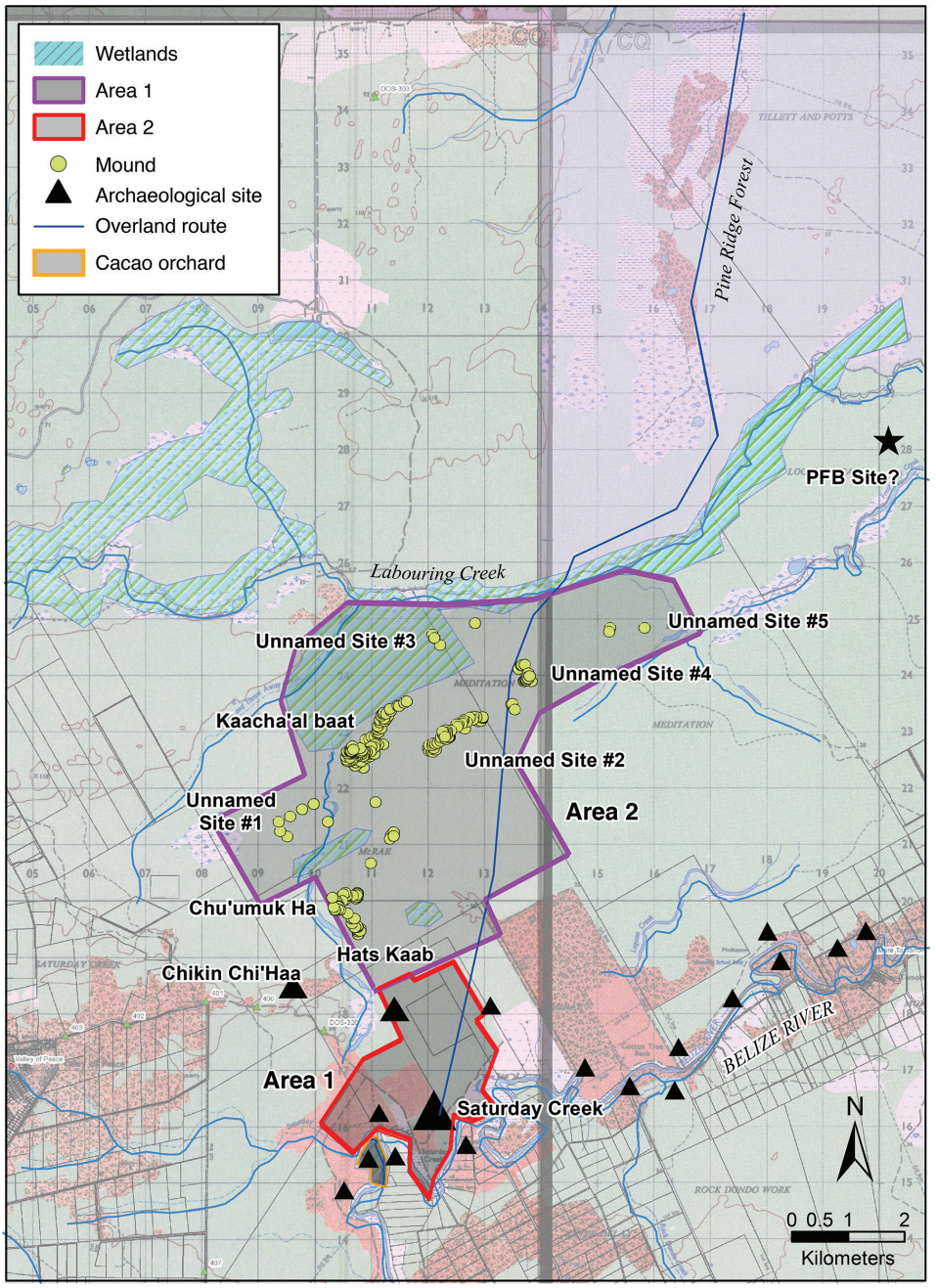


Plate 5.1. Projected overland route with wetland fields demarcated and sites shown trending north-northeast with approximate location of large site identified in the Programme for Belize survey (map prepared by M. Brouwer Burg).

drone imagery in some instances can pick up more subtle mound features than the naked eye can discern on the ground (see further below). Furthermore, the drone mapping produces a DEM that allows us to monitor the degree of mound destruction over time (for more details on the methods used in the drone mapping, including equipment, data collection, and data processing see Harrison-Buck, Willis, and Walker [2016]).

Mapping Results

Prior to flying the drones, we knew from pedestrian survey that the area was densely settled but had no idea how dense the settlement was until we saw the results of the drone imagery. After analyzing the 3D data, an unprecedented number of archaeological features were identified in the open fields, particularly north of Saturday Creek. Most of these appear to be small and low earthen mounds, which we interpret as the remains of ancient Maya residential structures. These mound features become more obvious in GIS when a virtual light source is used to illuminate the model from highly oblique angles. Figure 5.2 shows the subtle variations in surface topography that highlights what appear to be hundreds of mounds packed into this small area.

We produced a rectified map of the drone survey to capture the settlement density (Plate 5.2). This map is based on a combination of the aerial imagery, elevation data from the DEM, and ground-truthing. Plate 5.2 is a preliminary map that requires more systematic survey, particularly of the structures in blue, which have not been ground-truthed and firmly located with a GPS. The structures in yellow show the mounds that have been verified to be archaeological in nature via pedestrian survey. Not only did these locations contain evidence of mounded architecture but surface inspection revealed associated artifacts and/or daub scatters on nearly every mound feature. A cursory inspection of the diagnostic ceramic material found on the surface indicates that many of these structures were continuously occupied from Preclassic to Postclassic times (ca. 500 BCE–1500+ CE). Finally, the structures in red are those that have been mapped by BREA with a TDS.

In this 7 km^2 area, we estimate there are 328 structures, which includes the urban core of Saturday Creek as well as the peri-urban and rural settlements on the outskirts. This comes to a total of 47 structures/km^2. To put this settlement density in perspective, the recent lidar survey of the Maya Biosphere Reserve, a 2,144-km^2 area in northern Petén, Guatemala, yielded an average settlement density of 29 structures/km^2 (Canuto et al.

Figure 5.2. Drone DEM image of Saturday Creek hinterlands with oval highlighting location of Saturday Creek site core in bush (map prepared by Mark Willis).

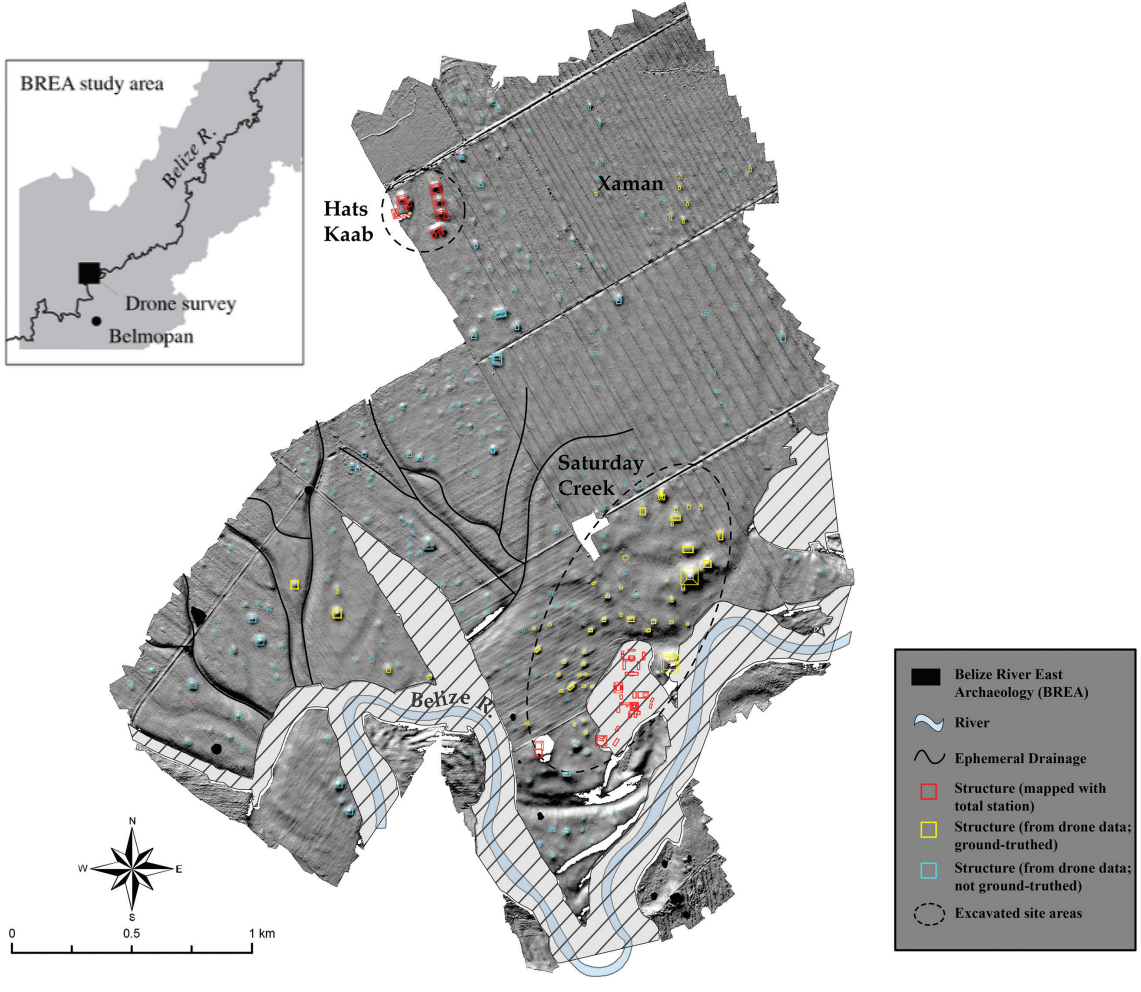


Plate 5.2. Rectified map of Saturday Creek and hinterland settlement (map prepared by S. Murata).

2018:1355). The Petén lidar survey area captures some of the largest Classic Maya cities, such as Tikal, with some of the most densely populated urban centers in all of the Maya Lowlands. That the average settlement density in and around Saturday Creek was 40% greater than the Petén average speaks volumes about the sheer density of occupation in this particular location in the middle Belize River Valley.

Of course, we cannot assume that all 328 structures were occupied at the same time or that they were all residential. The former issue is more difficult to resolve. Although calculations are not always considered accurate, scholars, in an effort to address the issue (relying on comparative ethnography), factor in a downward adjustment to account for nonsynchronous use of structures at any one time. Averaging multiple comparative sources, Marcello Canuto and colleagues (2018) propose a middle value of 83% of structures being contemporaneous, with a 17% downward adjustment. Using this as our index, we estimate that, of the 328 structures, only around 272 were used at any one time, making the average structure density around 39 structures/km^2.

Additionally, one cannot assume that all of these structures were necessarily residential. Averaging the ethnographic comparative sources, Canuto and colleagues (2018) propose a middle value of 81.1% of structures being residential, with an 18.9% downward adjustment for nonresidential buildings. Using this as our index, we estimate that only around 266 of the 328 structures were residential structures. If we assume that not all of these residences were occupied at the same time and apply the 17% downward adjustment of noncontemporaneous occupation, this means that 221 or 32 residential structures/km^2 were occupied at any one time. This number would increase by another 10% (N = 242 or 35 residential structures/km^2) if one factors in the invisible or hidden structures that are thought to be mostly residences (Canuto et al. 2018, see Supplementary Materials). If we use the middle value of 4.89 for the number of persons per household, as proposed by Canuto and colleagues (2018), and apply this number to 242 residences, the total population density at any one time can be estimated at just under 1,200 persons living in this 7 km^2 area or nearly 170 persons/km^2.

The drone imagery revealed hundreds of previously unrecorded mounds in the Saturday Creek hinterlands, particularly dense in the vicinity of the Hats Kaab Group (see Figure 5.2 and Plate 5.2). As noted earlier, Hats Kaab is a large ceremonial complex that resembles other ancient Maya E-Group architectural configurations. It contains a triangular

arrangement of structures that may have served to commemorate astronomical events, among other functions (see Brouwer Burg et al. 2014, 2015, 2016; Runggaldier et al. 2013; for a broader discussion of E-Groups, see the contributions in Freidel et al. 2017). Although most of the hinterland settlement consists of small- to medium-sized mounds, the Hats Kaab complex represents one of the more substantial plaza groups in the hinterland area, located about 1 km to the north of the Saturday Creek urban core.

The Hats Kaab Group was cleared of forest about 10–15 years ago, and, according to locals, the mounds were bulldozed substantially. The BREA team identified the large mound complex in January 2011. The following summer the survey team, led by Satoru Murata (2011), mapped the Hats Kaab complex, which covers an area roughly 380 m x 350 m, with a Nikon TDS. This involved the collection of around 1,000 data points with the TDS, which took about two days (roughly 14 hours). During their January 2014 survey, Walker and Willis mapped this same area using drones in about three minutes. Figure 5.3 shows the comparison of the two maps of Hats Kaab. Both produced comparable contour maps of the mounds. Yet the map created with the TDS has the advantage of the archaeologist's trained "eye," catching precisely what is there and, in some cases, recording small details that are not picked up in the photogrammetric map. The map produced by the TDS is also "cleaner" than the photogrammetric image, omitting certain things, like plow furrows, which the drones do not filter out. However, the expedience of the UAVs is unparalleled. In less than two days (the total time it took to map Hats Kaab with the TDS), Willis and Walker were able to cover an area over 50 times the size of Hats Kaab and expediently map a monumental archaeological landscape that consists of a dense and expansive regional settlement. The results of this study leave little doubt that in high-risk situations, such as at Saturday Creek, where destruction of the archaeology is occurring at a rapid pace and time is of the essence, drones offer a fast and effective solution, providing detailed maps of a site in a fraction of the time it takes to map with a TDS.

The Urban Core of Saturday Creek

The urban core of Saturday Creek remains in bush and was mapped with a TDS over the course of two BREA field seasons in January and summer 2014 (Figure 5.4). The site contains the largest urban core in the middle Belize River Valley with a sizeable surrounding peri-urban and rural settlement area (see Plate 5.2). Prior to the BREA project, the Valley of Peace Archaeology project, under the direction of Lisa Lucero, produced a rectified

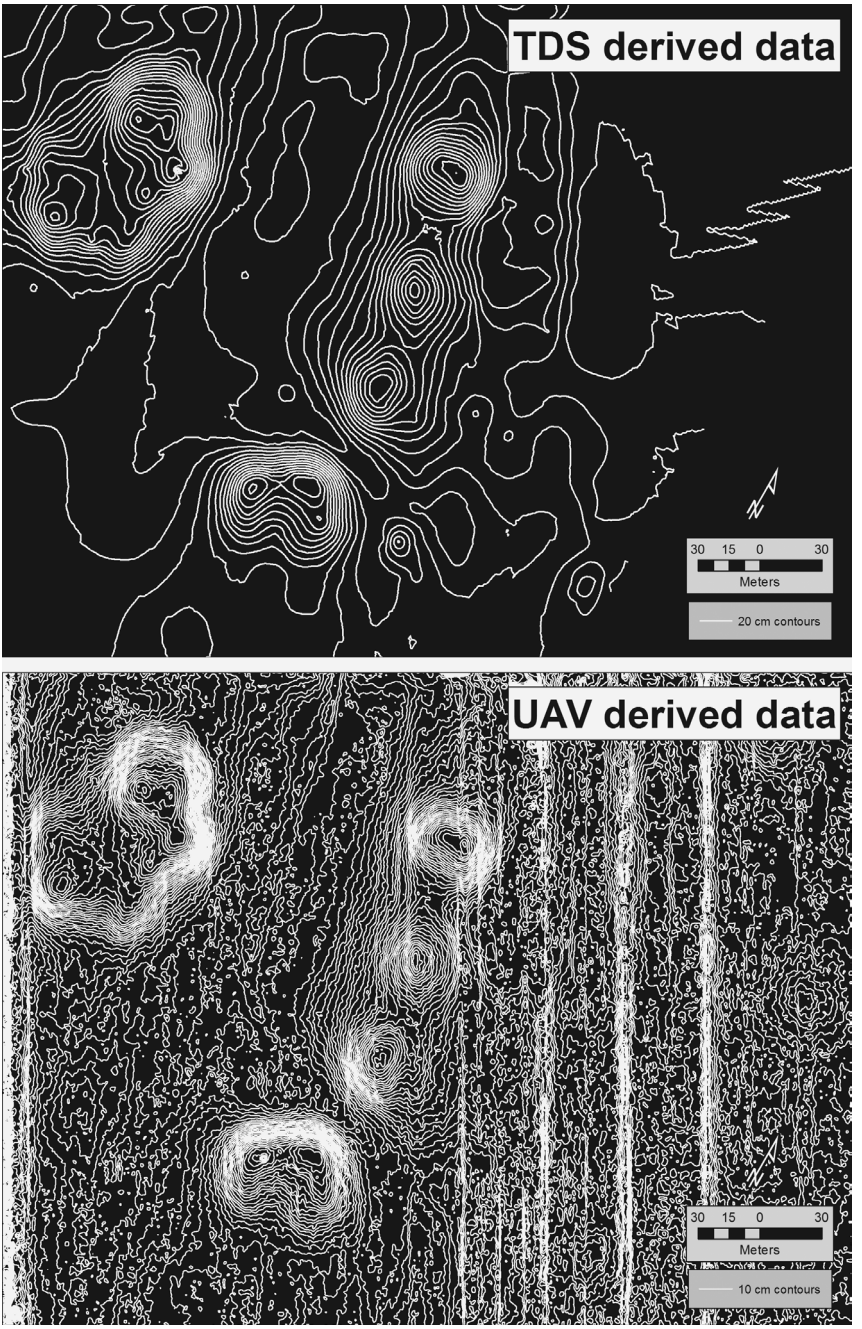


Figure 5.3. Topographic map of Hats Kaab E-Group showing differences between TDS (*above*) and UAV-derived data (*below*; maps produced by S. Murata and M. Willis).

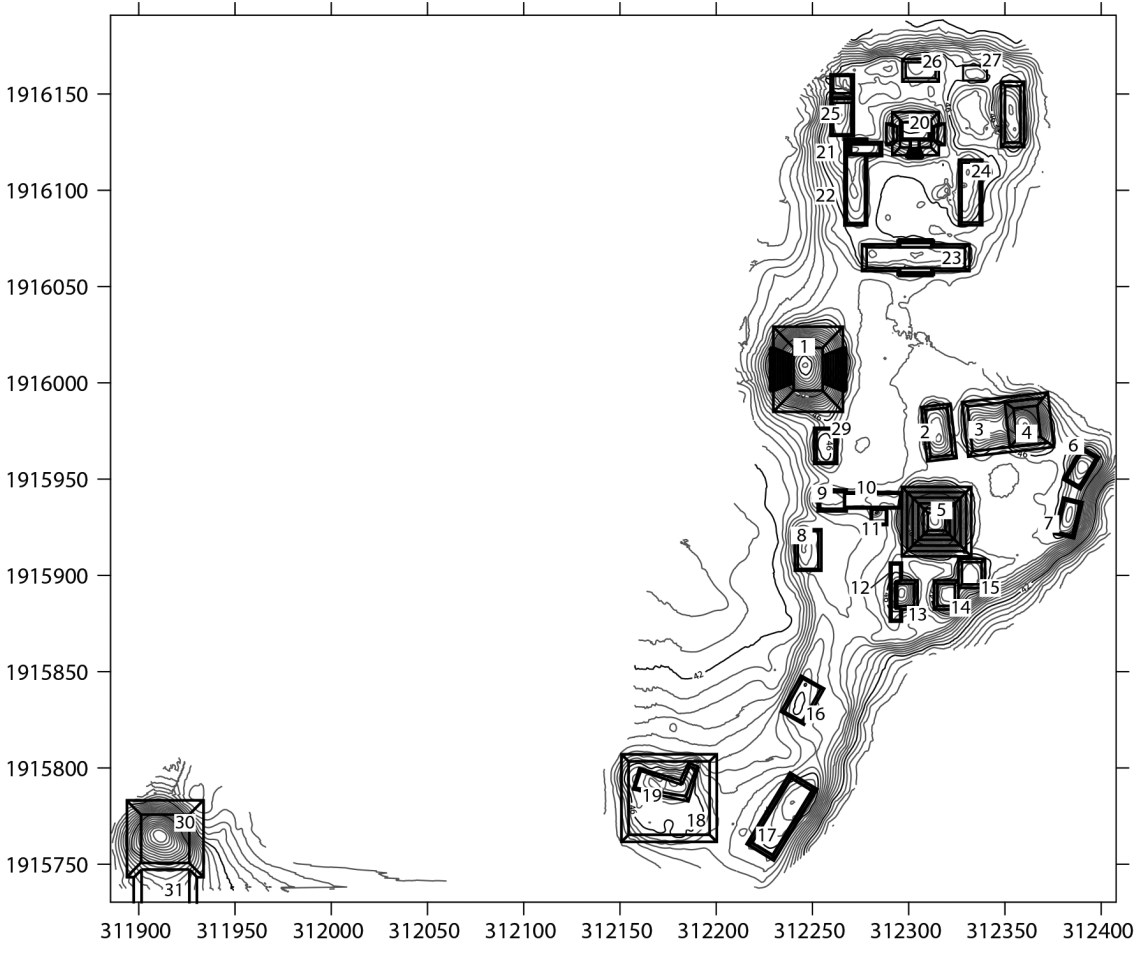


Figure 5.4. Topographic map of Saturday Creek site core (map prepared by S. Murata and B. Houk).

map of the Saturday Creek site core using an optical transit and stadia rod (Lucero 1999b:10; see also Lucero et al. 2004). Of the 100 mounds they recorded at Saturday Creek along the northern side of the river, Lucero noted that her survey team was only able to map 75 of them. The BREA survey team spent seven weeks total in 2014 surveying and remapping the site core of Saturday Creek using a Nikon TDS and Trimble GeoXH GPS unit (see Figure 5.4; Murata et al. 2015). This work has allowed us to record detailed topographic information for the site core (see Figure 5.4) and has allowed us to more accurately tie in the site to our existing GIS map of the BREA study area (see the site core superimposed on Plate 5.2). Saturday Creek has a sizeable urban core with a main elite residence to the north, three large pyramids, and a smaller pyramid with a ball court attached in the central plaza. In surveying the southern section of the site, which the Valley of Peace Archaeology project had not previously mapped, we identified another plaza group and several large structures, two of which appear to represent a second ball court at the site.

The Peri-Urban Landscape

Some of the urban core of Saturday Creek clearly extends beyond the bush to the north and was mapped with the drone. Some of these sizeable mounds have been the victims of repeated plowing and stone removal over the years. This urban core area is designated by a dashed oval line in Plate 5.2. Moving out in all directions from this urban core is a peri-urban zone where the ancient structures transition to more widely dispersed rural settlement. The density of settlement appears to pick back up in the area surrounding the Hats Kaab E-Group, which is about 2 km north of Saturday Creek. It is unusual to only have an E-Group with no other pyramidal or elite residential architecture nearby. It is possible that the E-Group is associated with Chikin Chi'Ha, another nearby secondary urban center located about 1 km west of Hats Kaab (Plate 5.1; Murata et al. 2018). The distance and the fact that there is a sizeable lagoon separating the two sites gives this architectural complex a sense of isolation and suggests that Hats Kaab is perhaps its own discrete peri-urban center, distinct from both Chikin Chi'Ha and Saturday Creek.

The Vacant Terrain: Defining the Heterotopia

In mapping the outskirts of the peri-urban landscape—the heterotopia—we can begin to examine how the "vacant" spaces in these fringe areas may

have been variously used in the past and how they potentially related with the urban core area of Saturday Creek and other neighboring secondary centers like Hats Kaab and Chikin Chi'Ha. Among the usages of the vacant terrain examined below are an overland route that cut through this area, according to Spanish colonial accounts. Based on their descriptions, the middle Belize River Valley was an area rich in cacao, which grew right on the banks of the Belize River, likely in the floodplains. Below we present our investigations of the overland route as well as the potential for cacao cultivation and other vacant terrain activities, including the cultivation of modified wetland fields that have been detected in the hinterlands about 5 km north of Hats Kaab (Plate 5.1).

An Overland Corridor

Sixteenth- and seventeenth-century Spanish accounts describe a north–south route in northern Belize, which apparently extended from Chetumal Bay south to the headwaters of the New River, known as Ram Goat Creek. Here at the headwaters, the Spanish reported docking their canoes and walking south over *pinal*—a stretch of pine savannah that runs south to Labouring Creek (Jones 1989:Map 2). This trek from Ram Goat Creek to Labouring Creek is roughly a 13 km walk. The Spanish description of this north–south overland route, namely, the strip of pine ridge forest, closely aligns to what we have observed along the route outlined in Plate 5.1.

The Spanish describe crossing over Labouring Creek on a submerged "natural bridge" of travertine (Jones 1989:138, 312 [Note 35]; see also Scholes and Thompson 1977:45). Our reconnaissance team conducted a number of pedestrian surveys along Labouring Creek and identified a series of archaeological sites in the vicinity of several partially submerged natural bridges of travertine, one of which could feasibly be the crossing point referenced by the Spanish (Buck et al. 2013). From here it is another 10 km through a mix of riparian zone and wetland swamp to Saturday Creek. The Spanish reported walking through wetland swamp where they arrived at an entry point on the Belize River that was named "literally, 'the hamlet where Chantome had been'" (Jones 1989:287–288). Elsewhere, it has been suggested that Chantome may be the ancient Maya site of Saturday Creek, which was perhaps largely abandoned when the Spanish came through the area during the sixteenth and seventeenth centuries (Harrison-Buck 2010; Harrison-Buck et al. 2013). Notably, in the Southwest Plaza at Saturday Creek two cache deposits were identified that contained a mix of Maya and Spanish colonial artifacts, suggestive of periodic visitation during the

contact period (Harrison-Buck et al. 2015; Harrison-Buck, Brouwer Burg, et al. 2016; Kaeding and Harrison-Buck 2015). The archaeological evidence lends further support to this site's identification as Chantome.

Elsewhere we have presented the results of a least-cost path analysis conducted along several proposed overland routes (Brouwer Burg et al. 2014, 2015). BREA carried out several field seasons of reconnaissance along these projected overland routes between Saturday Creek and Labouring Creek to the north, identifying numerous sites along the way (Plate 5.1; see Buck et al. 2013; Gantos 2015; Gantos and Buck 2018; Harrison-Buck et al. 2012; Harrison-Buck et al. 2013; Harrison-Buck et al. 2015; Harrison-Buck, Brouwer Burg et al. 2016). Our survey, coupled with geospatial mapping, has helped us to refine one possible overland route based on the dispersal of the mounds identified in this area (shown in Plate 5.1).

Our reconnaissance teams regularly conducted surface collection at many of the sites along this route, and all of them revealed dense scatters of Terminal Classic ceramics, shedding light on the length of time this route may have been used. Saturday Creek and Chikin Chi'Ha both show evidence of Terminal Classic occupation. Saturday Creek, Hats Kaab, and Chum'umuk Ha are, thus far, the only sites where we have firmly identified earlier (Preclassic) material.

Wetland Fields

Extensive clearing in recent years in Area 2 north of Hats Kaab has revealed a series of settlement clusters that all seem to trend north-northeast (Plate 5.1). The settlement is situated on the slightly elevated ground between large swaths of vacant terrain consisting primarily of wetland swamps. Some of the settlement parallels a large expanse of wetlands that runs along the southern side of the Labouring Creek drainage. We refer to this system of wetlands collectively as Jaegar Wetlands (see Plate 5.1; Gantos 2015; Gantos and Buck 2018). All of these wetlands show evidence of modification in the form of ditched and drained fields (Harrison-Buck 2014; for some comparisons elsewhere, see Beach et al. 2015; Guderjan and Krause 2011; Luzzadder-Beach et al. 2012; Siemens 1983). The fields in Jaegar Wetlands have been identified using publicly available Google Earth imagery.

One clearly defined expanse of wetlands filled with ditched and drained fields in Jaegar Wetlands measures 2.87 km^2. This is equivalent to over 700 acres of wetland fields that were potentially cultivated by the ancient Maya. Although the modern sugar plantation has obscured large portions of this modified wetland system in Area 2, it is clear the wetland fields were more

extensive in the past, possibly exceeding twice their preserved size. Ethnographic data varies, but most studies estimate that for every person, an average of 1–2 acres of cultivated land is required to feed them annually, although some have pushed this slightly higher to account for fallow cycles (Dumond 1961). Assuming an average of 1–2 acres/person, 700 acres could feasibly support between 350 and 700 people. However, if we are correct that the wetland system was actually double the size, it could easily have supported at least twice this population. Using the 4.89 persons/household index, this means the wetland fields could have supported somewhere between 143 and 286 households.

Thus far, we have recorded over 60 mounds in the settlement clusters found in Area 2—if Chikin Chi'Ha is included in this count, the number of structures rises to roughly 120, still well under the number of households the wetland fields could have supported. Based on the presence of such an expansive field system, we suspect that a large urban center exists somewhere in the vicinity of Jaegar Wetlands (see Plate 5.1). The BREA team has made several attempts to access the areas circumscribing the wetlands to the northeast, but due to the remote location and the seasonal inundation of the wetlands, it has proved to be incredibly challenging to access on foot or via canoe outside of the dry season when there is less flooding (Gantos 2015; Gantos and Buck 2018). According to an environmental survey published in 2000 by the Programme for Belize, there is reportedly a sizeable archaeological site in the tract of high ground to the northeast of Area 2 that is in bush just south of Jaegar Wetlands and north of White Water Lagoon in an area known as Logwood Caye (Programme for Belize 2000; see Plate 5.1). There the Programme for Belize reported a series of mounds, including a sizeable pyramidal structure measuring roughly 13 m in height (Programme for Belize 2000:10). We plan to continue our efforts at reaching this area for reconnaissance in future seasons.

As noted above, several other swaths of wetland fields have been observed in Google Earth imagery between other clusters of settlement. These strings of settlement, trending north-northeast, suggest to us that these hamlets may have been laid out explicitly to align with these tracts of wetland fields (and may also be oriented to an overland route that cut through this peri-urban settlement). It is possible these discrete clusters of settlement were independent communities. However, given the labor necessary to manage such a vast wetland system and the settlement distribution, all trending north-northeast in the direction of the Logwood Caye area, it is

possible these settlements represent peri-urban sprawl associated with the larger center that purportedly exists in this area. If so, we would expect the site report by the Programme for Belize to have a substantial Terminal Classic occupation based on the surface finds from the north-northeast trending settlement. We also would suspect that the ditched and drained fields of Jaegar Wetlands date to this time period as well, although further archaeological investigation is needed to confirm this hypothesis.

Orchard Agriculture

In the middle Belize River Valley the Spanish recorded a series of contact period Maya settlements with sizeable cacao orchards planted right on the riverbank, which came under the control of the Spanish *encomienda* system during the early colonial period in the sixteenth and seventeenth centuries (Jones 1989). Based on the Spanish accounts, ethnohistorians Grant Jones (1989: Map 2) and Ralph Roys (1957) have suggested that at least six Spanish–Maya contact period sites (Chunukum, Lucu, Boxelac, Chantome, Zaczuz, and Petenzub) all cluster in the midsection of the Belize River Valley (Figure 5.1). As noted above, it is hypothesized that Saturday Creek may be the site formerly known as Chantome that the Spanish describe (Harrison-Buck 2010, 2017). The nearby town of Lucu was the said to be the most sizeable, and we speculate that it may be the dense settlement we refer to as Xaman (see Figure 5.1). Lucu was "rated an important settlement" by the Spanish (Jones 1989:287; see also Scholes and Thompson 1977:45, 47); Roys (1957:163) described it as a "prosperous place with many cacao groves . . ." planted along the riverbank.

Elsewhere we have reconstructed where and how much cacao could have potentially grown in the vicinity of Saturday Creek where Lucu and Chantome were likely located (Harrison-Buck 2017:112–113). Soil studies in the upper Belize River Valley by Daniel Muhs and colleagues (1985) suggest that the well-drained, loose, sandy soils of the floodplains are the most ideal soils for growing cacao. They examined the soils around the contact period settlement of Tipu in the upper Belize River Valley, where the Spanish also reported dense cacao orchards in the early colonial period. In our ground-truthing and inspection of satellite imagery around Saturday Creek, we have identified several large expanses of floodplains. Notably, these floodplains (one referred to as Otley's Flat and another huge expanse across the river known as Mount Pleasant) are virtually devoid of mounds. The configuration of the floodplain and surrounding dispersed settlement

resembles Tipu as well as other sites like Barton Ramie, upstream on the Belize River, which Gordon Willey described as *the* typical settlement configuration for the Belize River Valley.

Cacao is a shade-loving understory tree. Today and in the past, cacao plantations function as complex agroecosystems, rich in biological diversity supporting a range of rainforest animals; in a floodplain, the shade trees act as a necessary riparian zone protecting the soils from erosion during flooding events. Laura Caso Barrera and Mario Aliphat Fernández (2006b:291) observe that areas with the highest production levels of cacao "are circumscribed to the fertile alluvial soils of the river systems." Unlike other cultivated plants, cacao trees thrive in such flood prone conditions. A high water demand plant, cacao grows best on the well-drained, alluvial soils with plenty of organic matter found in low floodplains, where there is a consistent hot and humid environment (Gómez-Pompa et al. 1990:249). These are the specific environmental conditions we find at Otley's Flat, Mount Pleasant, and other places along the middle Belize River Valley (Frey and Knorr 2013; Muhs et al. 1985).

Early Spanish colonial records report that the Maya typically planted cacao in orchards spaced about 12 to 15 feet apart; placing cacao trees too close together can inhibit production of fruit (Fowler 2006:314; Oviedo 1851–1855, 1:317). We estimate more than 1,200 cacao trees could potentially have been cultivated in Otley's Flat alone, spacing them conservatively 15 feet apart (Figure 5.5). The larger expanse of floodplain across the river at Mount Pleasant may possibly have supported twice this amount. We suspect that cacao was grown all along the banks of the Belize River on the floodplain terraces within a riparian forest that was intensively managed.

Discussion

Like the settlement occupation, we cannot assume that the activities, like cacao cultivation, taking place in the fringes of the peri-urban landscape remained constant through time. However, we do know that cacao was a staple in ritual feasts from Preclassic to Postclassic times and that the places where this tree crop can be productively grown are limited. Given that environmental conditions in the middle Belize River Valley are ideal for such tree cultivation, it seems likely that the Maya would have planted cacao here during prehispanic times, long before the Spanish arrived. In the case of wetland agriculture, we suspect this too was an activity dating to prehispanic times based on the evidence of Terminal Classic debris on

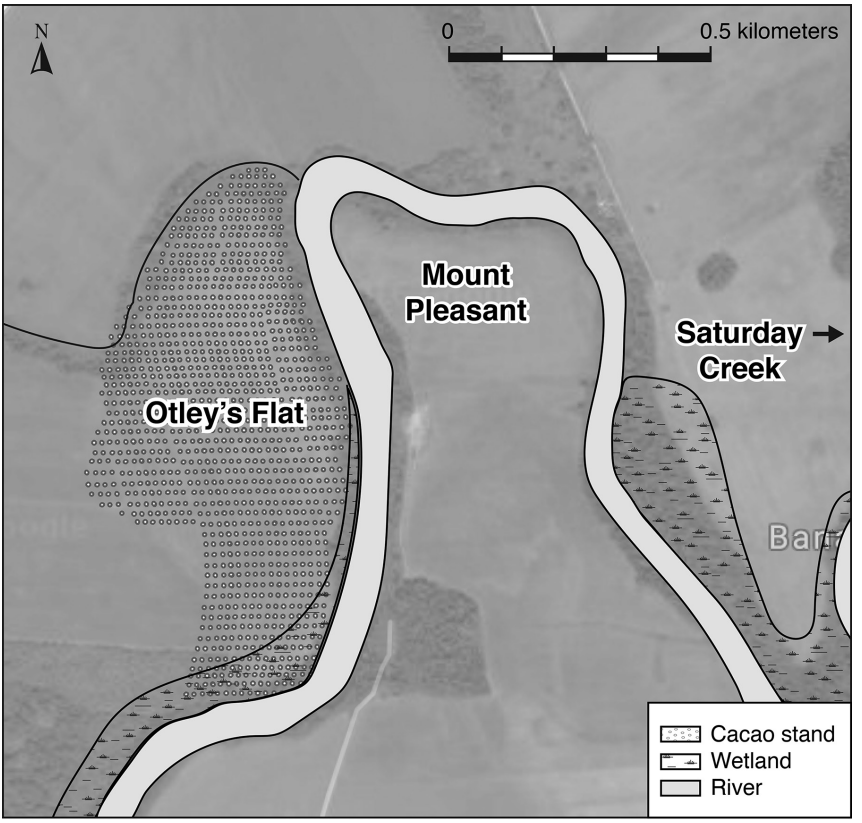


Figure 5.5. Closeup of Otley's Flat floodplain showing proposed locations of cacao orchards in the vacant terrain of the Saturday Creek hinterlands.

the surface of settlements that are in direct association with wetland fields. However, unlike cacao cultivation, wetland agriculture may not have continued into the contact period based on the Spanish descriptions of the wetland swamps that they trekked through in this area, which are described as rather inhospitable environments rather than well-managed landscapes.

It remains uncertain whether the overland corridor recorded by the Spanish was used in earlier times. However, the sandy pine ridge savanna environment offers a naturally high, dry, open north–south linear path that runs uninterrupted for over 70 km. From a practical standpoint, it seems likely that at least this portion of the route was used through time as an overland corridor. Still today, this terrain, although not formally paved, offers a route that is mostly drivable and still well-trod with a lot of overland foot traffic. Notably, the southern tip of the pine ridge corridor ends

less than a kilometer from the largest expanse of the Jaegar Wetland fields (Plate 5.1).

The management of transportation corridors, cacao cultivation, and wetland agriculture are activities that all took place in the vacant terrain or heterotopia of ancient Maya monumental landscapes. These "fringe" activities are associated with the peri-urban and rural settlements but also may have been directly tied to neighboring urban centers—enabling the movement of people and goods and providing the foods necessary to support these dense populations. Advances in geospatial technologies are transforming our understanding of the relationship between urban centers and their neighboring peri-urban and rural settlement. Equipped with high-resolution lidar imagery, some scholars suggest the rural settlements in densely populated areas should be viewed as part of a "conurban" landscape where "landesque investments" like wetland agriculture are part of an "integrated totality across a continuous expanse" politically coordinated and "energized" by the urban core (Garrison et al. 2019:135). From a conurban perspective, peri-urban and rural landscapes are not separate from the urban core but actively integrated into "mainstream" cosmopolitanism.

From a heterotopian perspective, the activities in the peri-urban and rural areas may operate in relation to a specific urban center but may also resist the values or agenda of the ordered cosmopolitan space. For instance, the hinterland settlement running along the wetlands could have been working to create an agricultural surplus for one of the urban centers nearby but could also represent factional groups that broke off from a larger center (either voluntarily or forcibly) in Terminal Classic times and independently developed the modified wetlands during a period of increased stress and social upheaval. The heterotopian perspective considers the peri-urban fringes as aberrant places that are different from the urban monumental core and therefore less predictable. For instance, the isolated E-Group of Hats Kaab presents an aberrant monumental feature that does not align with the standard Preclassic layout of urbanized space and could be described (in Foucault's [2005 (1970):xxii] words) as "more confused, more obscure, and probably less easy to analyse."

Concluding Thoughts

Compared to the large core Maya centers of the northern Petén, Saturday Creek is a secondary ceremonial center, similar in size and configuration to Barton Ramie, where Willey performed his groundbreaking settlement

pattern study nearly 70 years ago. Yet, while the urban core is smaller than the large urban centers of the northern Petén, when the peri-urban and rural settlements are considered, the density of settlement around Saturday Creek is substantial. The average settlement density in and around Saturday Creek is estimated at 49 structures/km^2. This is 40% more than the average settlement density (29 structures/km^2) found in the northern Petén area, which is considered to be the urban heartland of the Maya Lowlands (see Canuto et al. 2018). The photogrammetric survey around Saturday Creek using drones has revealed hundreds of preserved earthen mounds and other archaeological features that in many cases are almost imperceptible when standing on the ground surface. In optimal conditions like this, where we had broad aerial coverage in open areas with minimal vegetation, drones have the ability to fly low over the ground and to collect extremely high-resolution imagery, which can be used to produce aerial mapping and 3D landscape modeling with centimeter accuracy, equivalent if not exceeding the resolution of more expensive techniques like lidar.

The drone results from Saturday Creek—a site that has endured repeated plowing for as much as 25 years—demonstrate that these damaged archaeological landscapes are worth salvaging and can yield fruitful data that greatly enhances our understanding of the urban core and its relationship to the settlement and activities taking place on the outskirts of the peri-urban landscape. The results of the drone data presented here combined with the ethnohistoric accounts and archaeological findings suggest that the area around Saturday Creek marked an important node in the landscape. The heterotopia or vacant terrain was not ordered like the urban core but may have been what encouraged the population aggregation in this area, providing an important transportation corridor, vast tracts of wetland fields, and broad floodplains with rich alluvial soils well suited for cacao cultivation. This study highlights the importance of heterotopian spaces in the monumental landscape and the vital role they play in maintaining long-term, dense populations in the urban core and peri-urban centers of the Maya Lowlands.

As the geospatial data improves and our view of monumental landscapes becomes more detailed and nuanced, diverse parts of the monumental landscape appear seemingly more interconnected. A heterotopian approach considers these parts as complementary but also simultaneously separate and discrete parts of a whole, even potentially in opposition, challenging a neat and ordered model for understanding the complex and varied relationships that likely existed between rural and urban communities.

Acknowledgments

Since 2011 the Belize River East Archaeology (BREA) project has yielded an incredible amount of data, which were collected with the help of University of New Hampshire students, volunteers, and an all-star BREA staff. We are particularly grateful to the "overland route" recon teams, including David Buck, Tim Divoll, Alex Gantos, Satoru Murata, Adam Kaeding, and Josue Ramos, and countless workers who assisted us in many of these arduous treks. Alex Gantos kindly brought the Programme for Belize (2000) report to our attention. We also wish to thank our BREA GIS specialist Marieka Brouwer Burg for her help projecting these least-cost paths, which were instrumental in helping the recon team to narrow down the best possible routes. We also wish to thank Brett A. Houk for inviting Mark Willis and Chet Walker down to Belize to conduct the drone survey in January 2014. In addition, we thank the University of New Hampshire for their continued support and for providing financial support for the UNH field school. We extend our gratitude to Jaime Awe and John Morris of the Institute of Archaeology for granting the senior author a permit for the BREA study area and offering their continued support and encouragement with this project. Finally, we are especially grateful to the Alphawood Foundation for funding the BREA project since 2011. None of this would have been possible without the foundation's generous support. A very special thanks to the program officer of Alphawood, Kristin Hettich. We are truly grateful for all of her tremendous encouragement and the incredible support she has provided to the BREA project in so many different ways. You rock.

6

Caracol's Impact on the Landscape of the Classic Period Maya

Urbanism and Complex Interaction in a Tropical Environment

DIANE Z. CHASE, ARLEN F. CHASE, AND ADRIAN S. Z. CHASE

The ancient Maya operated within a variety of interrelated landscapes. The physical locations that they occupied were often completely transformed—water was captured and channeled; soils were excavated, manipulated, and transported; and the enveloping natural canopies were removed and replaced with useful plants, trees, and crops. Modifications to the physical landscape also resulted in changes to ground temperature and in some cases may have affected climate. Like the physical landscape, ancient Maya sociopolitical landscapes were also dynamic, with differential impacts on economic linkages and physical well-being in different parts of the Maya area at any one point in time. Late Classic period (ca. 550–800 CE) ancient Maya sociopolitical landscapes were engaged in what may be termed "global" relationships; this interplay left Caracol, Belize, in a position to incorporate, at least for a period of time, several distinct polities and their diverse environments into its broader political and ritual sway.

Adaptations by the ancient Maya were complex but to a large extent were conditioned by and responsive to local environmental and topographic factors. While not all adaptations were necessarily sustainable, one in particular—low-density urbanism—appears to have allowed the Maya greater resilience and, at least in some circumstances, the challenge and opportunity to develop their settlements at scale. The largest low-density settlements of the Classic period Maya were often located away from readily accessible water sources and in landscapes that today are considered largely inaccessible; the locations of these sprawling metropolises raise the question

of what benefit they derived from their scale. Comparative research on ancient and modern cities suggests that, among other things, "energized crowding" drew people to people to live and congregate in cities (Kostof 1991:37). While Western cities both excluded agriculture and bounded this crowding in smaller spaces, Maya cities essentially crowded their expansive landscapes with both settlement and agriculture, using both intensive and extensive agricultural strategies within urban confines (Chase and Chase 2016a). We would argue that one benefit of Maya low-density cities—at least at full scale when focused on in-city agricultural production—was the ability to mitigate environmental and climatic fluctuations because of the presence of different microenvironments and microclimates within the city's perimeters. In fact, we suggest that Maya urbanism in the Southern Maya Lowlands was expansive and formed broad integrated regional systems that were an effective adaptation to tropical environments in that they distributed the risk of "bad year economics" (Halstead and O'Shea 1989) through the use of a "managed mosaic" of crops (Fedick 1996)—in conjunction with a similar mosaic of the household production of a wide variety of other goods.

By the Late Classic period, if not earlier, at least a dozen Maya cities were characterized by a preindustrial low-density urbanism that covered upward of 200 km^2 into metropolitan areas (e.g., Chase and Chase 2016a, 2016b). We have been working for over three decades at one of these large cities—Caracol, Belize—and the archaeological work associated with this site helps shed some light on how the Maya successfully thrived in an environment largely devoid of natural water resources for more than 1,500 years. These same data also suggest that this city's demise may ultimately be linked to human choices within an exteriorly interconnected economic and political framework that was potentially compounded by environmental or climatic change.

Caracol, Belize: The Components of a Monumental Landscape

Our archaeological work at Caracol, Belize, is a long-term attempt to understand the development of the site within the Vaca Plateau in broader Maya social and environmental contexts (e.g., Chase and Scarborough 2014). Situated within the Southern Maya Lowlands, Caracol is somewhat unusual for a Lowland Maya site in that it is situated at an altitude of over 550 m. The site is located in the foothills of the Maya Mountains

where wind patterns generally ensure monthly rainfall, even if only minimal amounts. As the site lies within the rain shadow of the higher elevations of the Maya Mountains, it is viewed as probably receiving upward of 2,500 mm of rainfall per year (Johnson and Chaffey 1973:11; incomplete records for the drier parts of the Chiquibul Forest indicate minimal rainfall amounts of 1480–1560 mm, which forms a minimum baseline for rainfall at Caracol). Often this rain is exceedingly concentrated and heavy. It is this rainfall that provided all of the water (potable and agricultural) for the site, and the population modified the landscape extensively to both create built reservoirs and manage the flow of water (Chase 2016a; Chase and Cesaretti 2019; Chase and Weishampel 2016).

The site was located within a critical topographic passageway that permitted the channeling of needed resources (particularly hard stone used in grinding maize) from the Maya Mountains in current-day Belize into the Petén of Guatemala (Chase and Chase 2012). This siting on a trade route likely bolstered its success. Warfare with the site of Tikal (see below for additional discussion) was also likely due to competition for trade routes.

In the course of this research, we ground-mapped some 23 km^2 of settlement and then subsequently used lidar to gain a better understanding of the full extent of the site (Figure 6.1 and Plate 6.1). These data show that an extensive causeway system integrated a metropolitan area of approximately 200 km^2 (Figure 6.2; see also Chase and Chase 2003, 2007a; A. Chase et al. 2011; Chase, Chase, Awe . . . and Brown 2014; Chase, Chase, Awe . . . and Fernandez Diaz 2014). Besides excavating the site's epicentral monumental architecture, we have also investigated the site's nodes of monumental architecture along its causeways (Figure 6.3) and archaeologically tested over 126 residential groups (Chase and Chase 2002, 2004a, 2017). The landscape in which Caracol is located has been extensively modified to construct agricultural terraces over approximately 170 km^2 of the city (see Chase 2016b); some 4 km^2 of these terraces have been completely ground-mapped (Chase and Chase 1998a; Healy et al. 1983), and the total extent of these terrace systems is visible in the lidar data collected for the site in 2009 and 2013 (A. Chase et al. 2011; Chase, Chase, Awe . . . and Brown 2014; Chase, Chase, Awe . . . and Fernandez Diaz 2014; Chase and Chase 2017). While sizeable human-made reservoirs are located both in the site epicenter and at 7 of the 20 major causeway nodes (see Chase 2016b:Table 1), at least 1,600 smaller human-made reservoirs are liberally distributed throughout the site's settlement area (Chase 2016a).

The final integrated layout of Caracol, as expressed through its causeways

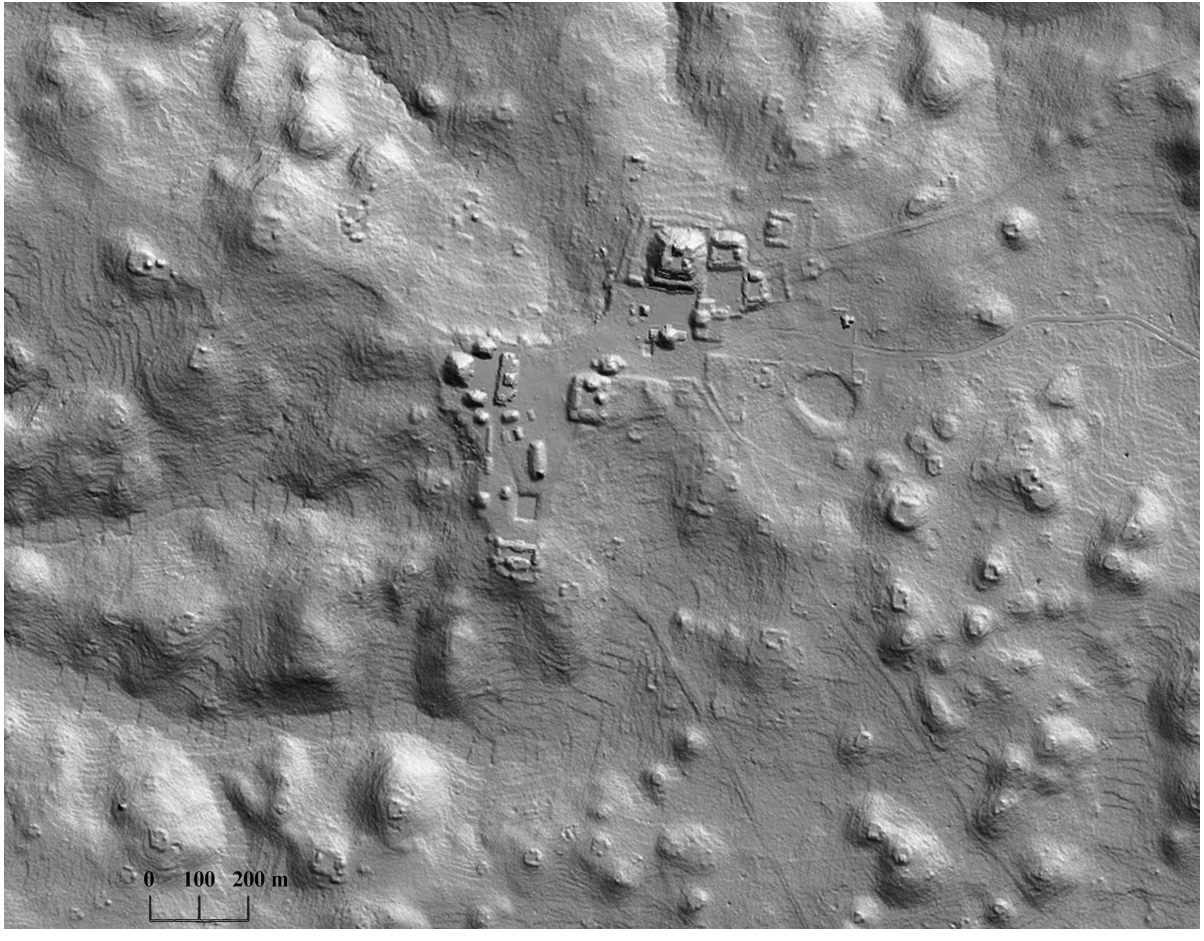


Figure 6.1. Lidar (2D) hillshade of central part of Caracol, Belize. North is at the top of the image.

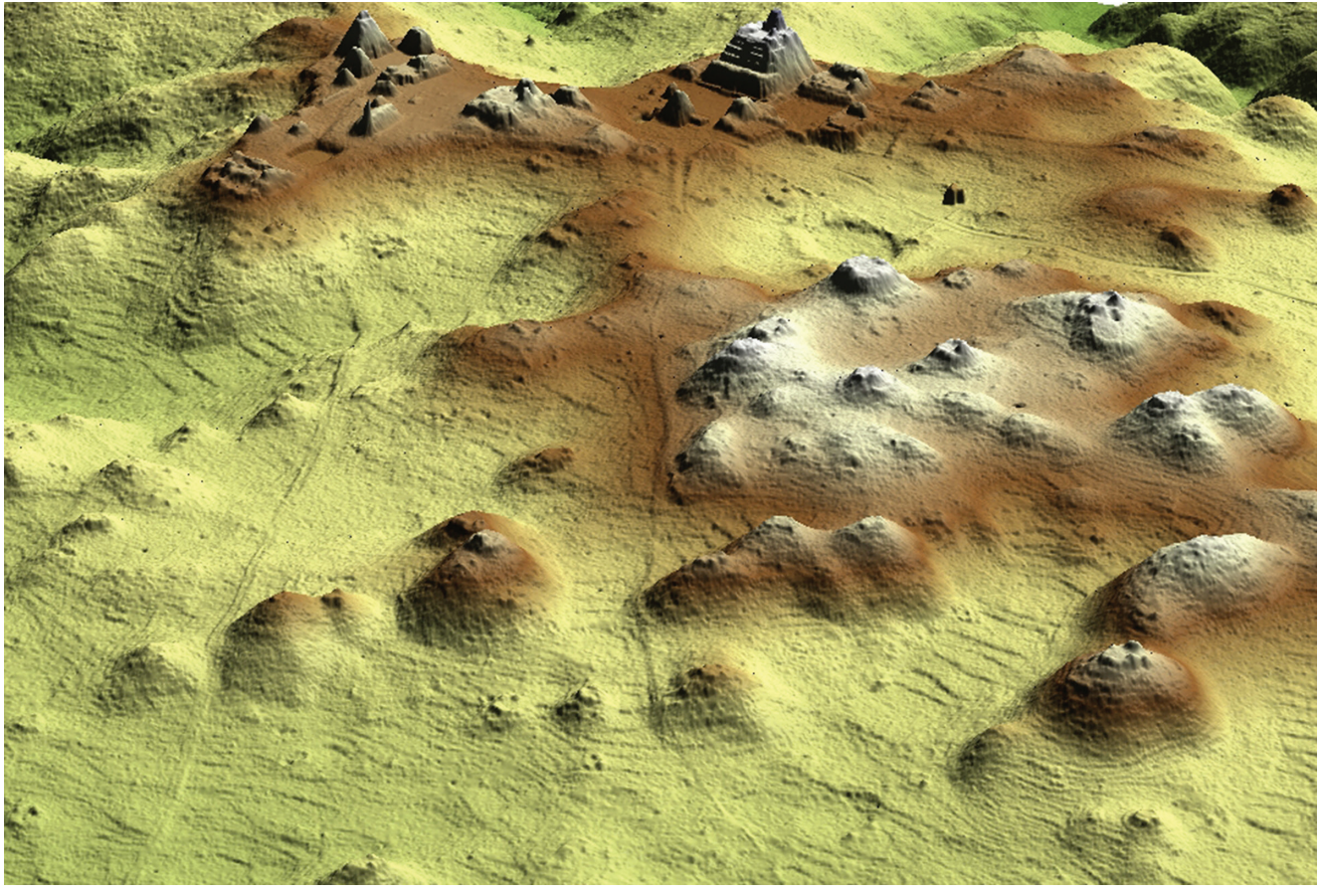


Plate 6.1. Lidar image (2.5D) of central Caracol showing topography, roads, residential groups, agricultural terraces, and monumental architecture.

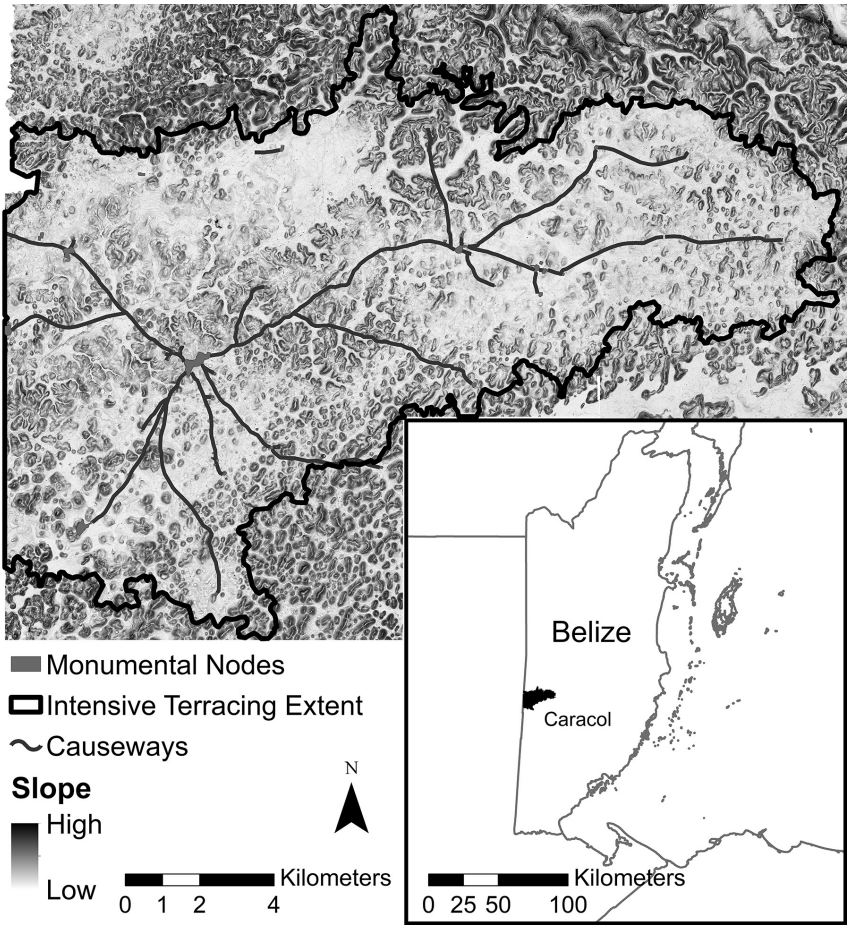


Figure 6.2. The city of Caracol, Belize, as revealed through on-the-ground mapping and lidar. A dendritic causeway system integrates the urban environment. The western part of Caracol extends west of the Belize-Guatemala border and has not been surveyed.

and termini as well as in the regularized distribution of its residential groups and extensive terraces, supports the notion that "city planning" was a key element in the site's development. What may have initially started out as an unplanned cacophony of plazuela groups and terracing was subsumed into a coordinated whole during the Late Classic period (550–800 CE). Caracol's settlement also can be related to the development of urban settlements elsewhere. The growth of Caracol is very similar to what has been described in modern literature as "edge cities" (Garreau 1979), in which centers of commerce and administration are embedded in the settlement landscape at some distance from the urban epicenter in order to serve

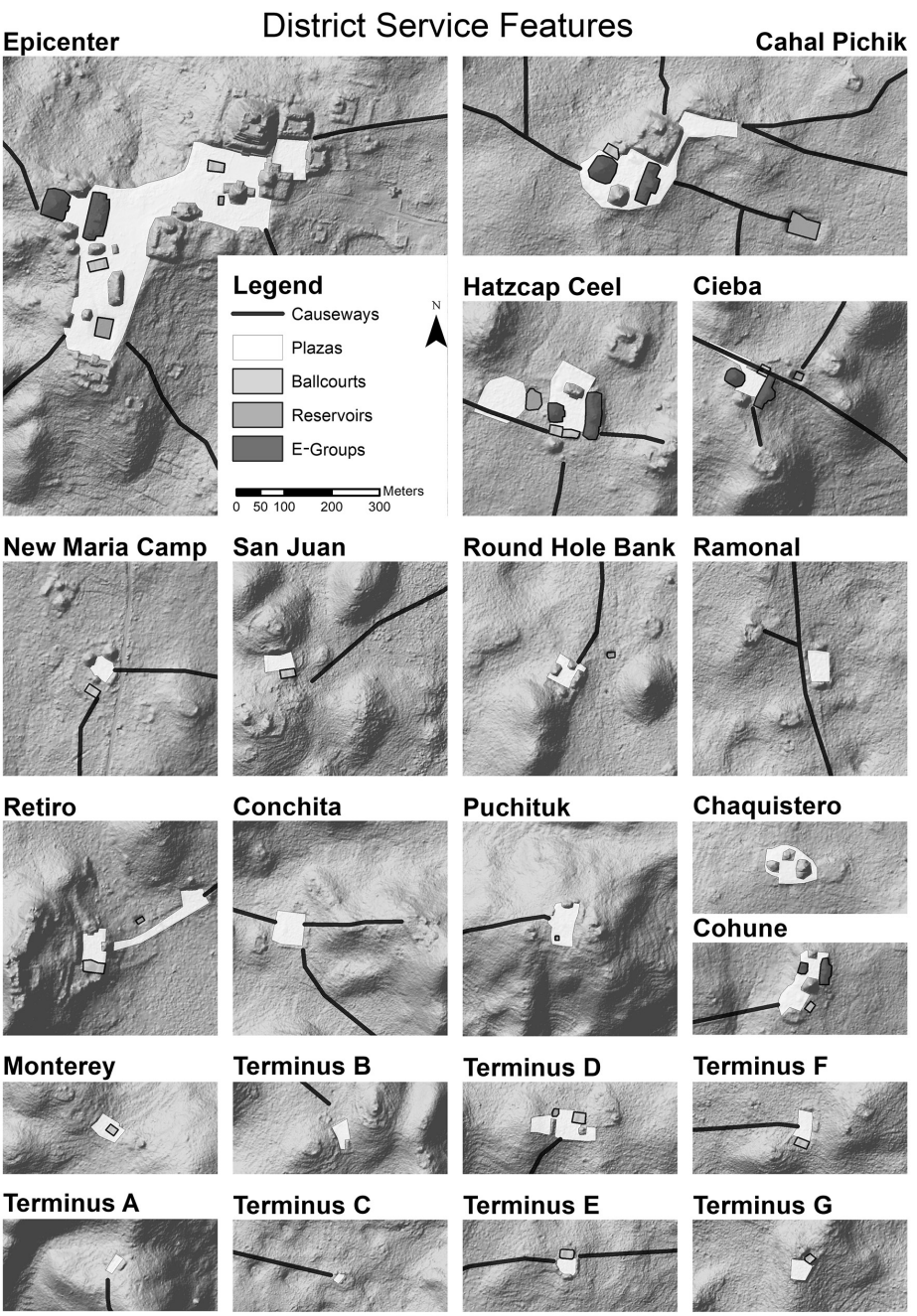


Figure 6.3. The known areas of monumental architecture within Caracol with certain districting features outlined (after Chase 2016b).

outlying populations (Chase et al. 2001). However, in the case of Caracol, many of these edge cities or termini began as independent centers that were subsequently joined to and incorporated within the Caracol urban landscape.

Minimally, four key constructed components compose the Caracol settlement system and are presumably at least partially responsible for the successful adaptation of Caracol's population to the local environment. These four components are (1) the site's residential plazuela groups, (2) the site's causeway system, (3) the site's reservoir system, and (4) the site's agricultural terraces. In addition, a specific Late Classic period management strategy—symbolic egalitarianism—that led to shared wealth and identity was also a key human development adaptation.

Plazuela Groups

For the most part, Caracol's settlement is composed of formally constructed plazuela groups (Figure 6.4) that contain a variety of structure types (Chase and Chase 2014). Generally, these groups are independently sited on raised rectilinear platforms that are placed over the entire landscape, being situated on the tops of hills, on the sides of hills, and in the bottoms of valleys. In the original 200 km^2 of lidar obtained in 2009 (A. Chase et al. 2011:395), 4,732 raised plazuela groups were evident, and the 2013 lidar sample has added at least another 619 raised groups to this sample; the nonraised plazuela groups that are more difficult to identify substantially increase the overall total of these residential features. Anywhere from 1 to more than 12 elevated substructures (that once supported buildings of various functions) are located along the edges of the raised platforms. Most common, however, are 4 to 5 constructions located on the cardinal sides of each plazuela group.

Caracol's plazuela groups were more than dwellings for the site's inhabitants. They formed the backbone of the site's economy. Archaeological remains show that each of the households contributed to the market economy, separately producing both perishable items and worked shell and stone tools that were used throughout the site (Chase and Chase 2014a; Cobos 1994; Johnson 2014; Johnson et al. 2015; Pope 1994). Neighboring households not only generally produced distinctive items but also had varied diets reflective of mixed-status neighborhoods (Chase et al. 2001; Chase and Chase 2017:190, 231). These heterogeneous neighborhoods are characteristic of walking cities (Chase and Chase 2016b:365; G. Storey 2006:9–10).

Unlike settlement at some other Maya sites, Caracol's plazuela groups do

Figure 6.4. A typical residential plazuela group at Caracol showing multiple excavations in progress.

not generally occur in nested concentrations (as would normally happen with the hiving off of generational kin groups wishing to maintain proximity to parents; see Webster [1989] for an example of a nested residential concentration at Copan, Honduras). Spatial integrity was maintained between distinct plazuela units—and the land between groups was generally occupied by agricultural terracing. Closer to the epicenter, the distance between plazuela groups is approximately 50 to 100 m, but the average spacing between groups is from 100 to 150 m for much of the site. While this regularized spacing between plazuela groups may have provided an upper limit on the number of individuals and extended family members that could live in concentrated areas located in proximity to each other, it had other benefits. It provided areas between plazuela units that could be used for kitchen gardening and terraced agriculture and that could easily be tended by households and fertilized through the use of domestic night soil. This regularized (and less compact) plazuela group spacing also offered some protection against the ready transferal of disease and provided for a more controlled and sanitary urban setting (e.g., Drennan 1988; see also R. Storey [2006] for a contrary pattern at Teotihuacan). As the site grew, it expanded to encompass the local region through retaining the spacing of its plazuela units, thus supporting settlement and population growth (Chase and Chase 2014b).

Using the standard methodology employed at the other Maya sites, which focuses on structure counts and likelihood of occupation (e.g., Culbert and Rice 1990), the 200 km^2 area that is estimated to compose the city of Caracol would have supported a population of over 100,000 people during the Late Classic period (Chase and Chase 1994:5; A. Chase et al. 2011; Chase and Chase 2017). Each residential group at Caracol was occupied by an extended family that grew its own food, practiced its own rituals, produced specialized goods for trade, and, by the Late Classic period (550–800 CE), was completely dependent on the site's market system for both quotidian and prestige goods (Chase and Chase 2015; Chase and Chase 2014a).

Causeway System

Part of Caracol's long-term success may also be attributed to the communication and transportation access provided by its extensive causeway system. This dendritic system connects all large Late Classic period architectural concentrations in the broader region directly to the site epicenter (Chase and Chase 2001) and specifically with the central architectural complex of Caana (Plate 6.2; see also A. Chase and D. Chase 2017a). These causeways also provided easy walking access throughout the city, even in areas of rough terrain. The radiating causeways focused traffic into and out of the epicenter, providing central control points for the broader city that fostered the integration of the site's large population, providing an excellent ancient Maya example of a "walking city" (G. Storey 2006:9–10). All of the causeway termini had large open plazas that provided the sitewide population access to commerce, helped distribute goods throughout the urban area, and also likely served as the focal points for sitewide governance and administration (Chase 1998; Chase and Chase 2001). That these plazas were used as markets has been demonstrated through several overlapping datasets, including soil chemical analyses (Chase et al. 2015; Chase and Chase 2014a). These causeway nodes also included once independent centers that were engulfed in Caracol's metropolitan area by the onset of the Late Classic period as well as nodes purposefully constructed to serve commercial and administrative functions for the city. Through these causeways, the entire metropolitan area of Caracol was brought into walking radius of urban service facilities (Chase 2016b) and integrated into a single community. These same causeways also facilitated the flow of goods and resources from outside the metropolitan area into the core of the city. In particular, goods made of metamorphic stone from the Maya Mountains (to the east of Caracol) flowed over its road system through the Vaca Plateau and were made

Plate 6.2. Photograph of Caracol's central architectural complex, Caana ("sky place").

available to the broader Maya world. The site occupies a geographic choke point that would have permitted control over the trade of these resources.

Reservoir System

The site of Caracol was located in an area that was devoid of larger natural bodies of water. Like other major Maya centers, such as Tikal, Guatemala, and Calakmul, Mexico, Caracol's siting in such a waterless environment (at least in terms of standing or running water) may have been predicated on ideological or economic factors, or both (D. Chase and A. Chase 1989). Nevertheless, water management was key to the development of Caracol. While riverine water can be found approximately 19 km to the site's north, east, and west, it is clear that the site's earliest inhabitants would have had to construct a water management system in order to occupy the area. And the successful maintenance of a water management system was key for the site's growth and development.

Large constructed reservoirs, capable of storing water for a substantial segment of Caracol's population, were located wherever sizeable early monumental architecture occurred, particularly being associated with the site epicenter and the ends of each of the site's early causeway nodes. The three earliest reservoirs at Hatzcap Ceel, Cahal Pichik, and Caracol itself were all over 1,000 m^2 in surface area; other termini reservoirs at Ceiba, Puchituk, Ramonal, Retiro, Round Hole Bank, and Terminus D were smaller, ranging from 70 to 260 m^2 in surface area (Chase 2016b). It may be that the construction of these smaller termini reservoirs was possible because of the Late Classic proliferation of constructed reservoirs in residential groups. All these reservoirs were positioned to catch rainfall runoff from broad plastered surfaces and, given their broad distribution throughout the urban landscape, certainly came into play during times of lessened rainfall. However, the larger reservoirs did not provide Caracol's elite with a monopoly on water, as has been suggested to be the case for other Maya centers (e.g., Lucero 2006); the plethora of smaller formally constructed reservoirs that were distributed throughout the site's settlement suggests that extended family units controlled their own access to water. Analysis of the lidar data for Caracol reveals that the site had a minimum of 1,600 smaller constructed reservoirs associated with residential groups (Chase 2016a).

It is the more localized reservoir system—broadly distributed among the various plazuela groups—that provided potable water for most of the site's population. Smaller, formally constructed reservoirs were located

throughout Caracol's settlement area and can be found in association with residential units of different status levels, although they are often attached to hilltop residential units. The placement and construction of these reservoirs was also often next to broad plastered surfaces to catch rainfall. The locations of these reservoirs in non-elite contexts suggest that they were independent of elite control. At least five reservoirs were located within any square kilometer of Caracol's settlement (Chase and Chase 1996). Most formally constructed reservoirs occupied high ground, presumably meaning that the Maya were cognizant of health issues that could occur had such units been located at lower topographic levels.

Some purposefully constructed reservoirs do occur in the fields, both as raised embankment catchment units and as check dams within valley terrace systems. Given their locations, it is likely that these reservoirs were employed for agricultural purposes. Also found within the terrace systems are constructed embankment walls set at an angle at the base of ravines that would have served to control and divert heavy runoff rainfall, thus preventing extensive erosion of valley terrace systems (Chase and Chase 1998a) and facilitating infiltration of water into the soil reservoir (Chase and Weishampel 2016).

Agricultural Terraces

With the exception of the basic topography of hills and valleys, the entire Caracol landscape is a product of intense human modification. Not only were causeways, plazuela groups, and other architecture situated on the terrain, but most of the landscape was excavated, manipulated, and then reconstituted as terraced fields (Chase and Chase 1998a; 2016b). While it has been suggested that some alluvial soils were imported into the region (e.g., Turner 1978:170), it is presumably more likely that soils used in the agricultural terraces were moved about within the site area itself (Coultas et al. 1994; Healy et al. 1983) and enhanced through occasional volcanic ashfall (see, e.g., Tankersley et al. 2011). Deforestation was probably extensive, with only the sides of steep hills being left intact; whether this resulted in a temperature increase (e.g., Oglesby et al. 2010) in the Caracol region is unknown. Quarries, which are quite common at most Maya sites, are rarely in evidence at Caracol; most quarries were presumably engulfed by the extensively constructed terrace systems that are distributed throughout the site. While these terrace systems may have begun through the efforts of individual smallholders toward the end of the Late Preclassic period, by the early Late Classic period most of the region about Caracol had been infilled

by settlement, and many terrace systems became exceedingly regularized in their distribution on the landscape and throughout valleys. The density of terraces and settlement suggests a centralized control or regulation of spacing as well as mechanisms for handling land disputes by the Late Classic period.

The terraces provided sustainable agricultural fields, even with minimal rainfall. They tend to retain water, a fact that can be seen today in the high proportion of palms that grow on these features (D. Rice, personal communication 1990), and were built to control the flow of water over the landscape (Chase and Weishampel 2016). Thus, the terraced fields would have provided a buffer against any sudden climatic change. Maize is more sensitive to drought than Old World crops like wheat (Daryanto et al. 2016), but the water retention of Caracol's agricultural terraces would have mitigated some of the effects of drought. And the very plants that the Maya used and continue to use—maize, beans, and squash—provided additional nutrients and pest protection as compared to Old World monocropping of wheat and rice. Not only does multicropping (see Ford and Nigh 2015:126; Nigh 2008) enhance nutrients within the terrace soils, the placement of some plants such as palms would have provided food and fuel sources and at least some shaded areas (Balick and Beck 1990; Johannessen 1957). In modeling agricultural production on the terrace systems in the northern part of Caracol based on soil and topographic slope, the continued long-term productivity of these features can be clearly established; very little decline in productivity occurs even after continuous use for 100 years; only with double cropping on these features would there have been a severe decline in productivity over time (Murtha 2002).

Symbolic Egalitarianism

During the Late Classic period, the residents of Caracol collectively enjoyed substantial prosperity, as indicated by shared access to identity markers and evidence of material well-being. Residents of household plazuela units and palaces alike had access to obsidian, marine shell, polychrome pottery, and jadeite. Ritual symbolism was also shared; all households participated in the same caching practices and buried their dead within their plazuela units in eastern mortuary shrines. Nearly every domestic unit—whether small or large—contained at least one tomb (Figure 6.5), and these chambers housed one or more revered ancestors who had been interred during auspicious times (e.g., Chase and Chase 2003a, 2011). We have elsewhere

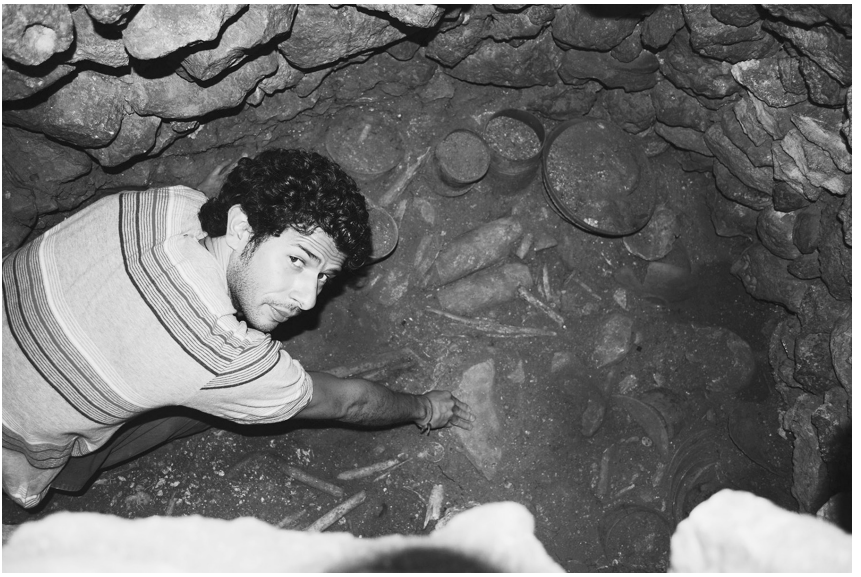


Figure 6.5. A typical residential tomb at Caracol in the process of excavation; the ceramics that are visible in the tomb partially reflect the wealth of the site's inhabitants.

defined the widespread prosperity and shared identity as symbolic egalitarianism and suggested that these phenomena resulted from a management strategy intentionally and successfully employed at Caracol following successful warfare against the Guatemalan sites of Tikal and Naranjo (Chase and Chase 2005a; A. Chase and D. Chase 2009; Chase and Chase 2006, 2017). Corresponding with this period of prosperity, shared identity, and symbolic egalitarianism was a decrease and, ultimately, a cessation in the erection of dynastic monuments, ostensibly the result of a star war waged by Naranjo at Caracol in 680 CE (see Chase and Chase 1998b:19; Chase and Chase 2000, 2003a:178). While there were real differences between the elite and other members of society, outward symbolism of these differences was minimized. Attempts to reestablish dynasty and to short-circuit symbolic egalitarianism at Caracol occurred late in the eighth century. We believe that these changes, which led to overt status differences and dichotomous distributions of goods between the palace elite and contemporary core populations (Chase and Chase 2004, 2007b), are symptomatic of the ultimate failure of the Caracol infrastructure system just before 900 CE.

Caracol, Belize: Its Position in the Late Classic Political Landscape

The sociopolitical landscape in which Caracol participated during the Late Classic period was one fraught with constant change—one where allies were fluid and polities rose and fell. When conjoined, archaeology and epigraphy provide some sense of the political complexities during the Late Classic period.

As presently construed by epigraphers (e.g., Martin and Velasquez Garcia 2016), there was a long-term competition between two primate states in the Southern Maya Lowlands: Tikal and the Snake Kingdom. The Snake Kingdom, located in the Northern Maya Lowlands, had a shifting capital that moved from Dzibanche to Calakmul in 635 CE (Helmke and Awe 2016a; Martin and Velasquez Garcia 2016). This kingdom is seen as dramatically impacting sites throughout the Maya Lowlands, including assisting or directing Caracol in its sixth-century defeat of Tikal (Martin and Grube 2008). Following these epigraphic reconstructions, the Tikal kingdom, which remained constant in its location at the Southern Maya Lowland site of Tikal, subsequently defeated the Snake Kingdom in war in 695 CE, leading to the eventual permanent downfall of this long-standing power by 751 CE. While epigraphy focuses primarily on the competing relationship between Tikal and the Snake Kingdom, archaeology makes it clear that the situation was more complex and nuanced. Regardless of who the texts might suggest as being the primary antagonists, Caracol's inhabitants prospered and the site grew following the initial sixth-century war with Tikal and the early seventh-century war with Naranjo (A. Chase and D. Chase 1989, 2001). And the site continued to thrive even following an eighth-century monument hiatus (Chase and Chase 2007b; Chase and Chase 2017:216–217). The polity was very much in the political mix and likely exploited the tortured politics between these two broader political systems.

Based on epigraphy, it appears that Caracol was an early client state of Tikal and that the ruling dynasty of the site may have been founded by a branch of the Tikal royal family. Yet Caracol independently appears to have developed a distinct and prominent political role; it has been interpreted as having provided the initial ruler for Copan, Honduras, in 436 CE (Helmke et al. 2019; Price et al. 2010). While early Caracol rulers appeared to be beholden to Tikal (Grube 1994), this changed in 562 CE when a star war resulted in Caracol's independence and the rise of the site's two

most important rulers, Yajaw Te' and K'an II. Based on archaeological data, it also appears that the 562 CE star war resulted in tangible benefits for Caracol in terms of population growth and prosperity. Subsequent to this event, the dynastic ritual architecture associated with the North Acropolis at Tikal also was appropriated by "usurpers" who occasioned a "dynastic overthrow" (Haviland 1992:73–74), presumably from Caracol, based on the recorded warfare events. It is probable that Caracol's two best-known rulers were interred in the North Acropolis of Tikal (Chase and Chase 2017): Yajaw Te' was placed in Tikal Burial 195 by 598 CE and K'an II was located in Tikal Burial 23 after his death in 658 CE; these interpretations are supported by a variety of archaeological data, including stable isotope analysis, and are consistent with our epigraphic understanding of this era (Chase and Chase 2020a).

While there was a relationship between Caracol and the Snake Kingdom, it appears that, given the distance and political upheavals of the time, Caracol took advantage of this relationship as a trusted ally to consolidate its hold over both Tikal and Naranjo through a 631 CE star war (Chase and Chase 1998b; Chase and Chase 2000, 2003a), leaving the Snake Kingdom to pursue other alliances like the one it had with Dos Pilas. Furthermore, Caracol Stela 3 names K'an II as the elder brother of the coeval Snake ruler and shows an ongoing relationship that minimally involved three rulers from this dynasty, suggesting that the relationship was not a simple subordinate one. Yet the archaeology also makes it evident that Caracol, under K'an II, consolidated its hold over both Naranjo and Tikal. A large number of Caracol-related stone monuments occur at Naranjo; these include at least one hieroglyphic stairway (Chase and Chase 2020a; Graham 1978; Martin 2017b), a carved panel (Graham 1978), and other monument fragments from within the fill of buildings (Tokovinine 2007:17). The carved panels found at Xunantunich, Belize, also likely came from Naranjo (Chase and Chase 2017:206; Helmke and Awe 2016b), more likely deriving from a building façade than from the reconstructed hieroglyphic stairway (Chase and Chase 2020a). While Simon Martin and Nikolai Grube (2008:73) believed that it originated at Caracol based on a small carved block fragment recovered in front of Structure B5 (see Grube 1994:113–114, Fig. 19.14a; identified as MF10, "a stela edge"), no hieroglyphic stairway exists at Caracol; neither carved stairway blocks nor panels (as occur at Naranjo) are known from the site. Instead, the distribution of hieroglyphic stairways (Helmke et al. 2015) and the political events of the seventh century make it more likely that the hieroglyphic stairway was part of K'an II's display of control

over Naranjo at Naranjo as a result of his successful star war. The later destruction and scattering of these monuments with their textual references to K'an II resulted from the successful Naranjo star war at Caracol in CE 680—during the reign of Smoke Skull, who had been in power at Caracol for some 22 years after the death of K'an II (Chase and Chase 2017).

The number of Caracol-related monuments that occur at Naranjo support the inference that this site was made into a second capital by Caracol and used as a "stepping-stone" to control Tikal and other sites in the Petén (Chase and Chase 1998b; Chase and Chase 2003a). The additional presence of Caracol rulers in "prime real estate" burials in the North Acropolis at Tikal further indicates that Naranjo was also under the direct sway of Caracol (Chase and Chase 2020a; Chase and Chase 2017:219) for a period of time. Thus, we suspect that Caracol was a very strong ally of the Snake Kingdom but that, because of distance and personal relationships, Caracol was able to remain independent, consolidating control over much of the southeast Petén. Subsequently, Caracol lost its hegemonic control over much of the territory in the southeast Petén as a result of the 680 CE star war by Naranjo against the site (A. Chase and D. Chase 1998b, 2020a).

Caracol's hieroglyphic history is relatively silent during the eighth century. While the lack of historic texts for might be interpreted to suggest that Caracol retired from the sociopolitical field, its population enjoyed great prosperity through the end of the Late Classic period (A. Chase and D. Chase 2009), confirming that texts alone are unlikely to provide all the answers in the reconstruction of Maya history. Archaeology provides complementary and supplementary data that can be used (to some degree) to recontextualize the more politically charged textual data.

The Abandonment of Caracol, Belize: Considering the Role of Climate Change

The idea that the Classic period Maya came to a disastrous end as a result of severe drought has gained serious traction in popular literature (Diamond 2005) and has additionally been adopted by a number of Mayanists (see Douglas, Demarest, et al. 2016; Gunn and Adams 1981; Hoggarth, Restall, et al. 2017; Iannone 2014; Luzzadder-Beach et al. 2012). The modern-day focus and political arguments over the effects of climate change have also served to drive drought-based interpretations of the Maya collapse. But it may also be argued that much of the support for drought-based explanation is tautological.

There is a tendency for academic interpretations concerning the Maya to mirror popular events and issues (Wilk 1985). The Russian Revolution is seen as having led to interpretations of the Classic Maya collapse as being caused by a peasant revolt (Becker 1979; but see Marcus 1982). Modern earthquakes, volcanic eruptions, and hurricanes also often lead to similar causal arguments for the earlier Maya collapse. Thus, to some degree, we would see the modern political focus on climate change as driving the current drought-based explanation for the Maya collapse.

Multiple lines of evidence have been brought to bear in terms of demonstrating that droughts appeared in past Maya climate records—these avenues include the use of soil cores drilled from lakes, speleothems collected from caves, and water-level rise observations for both the sea and for cenotes (Douglas, Demarest, et al. 2016). Generally, these data have been combined to suggest that severe drought impacted the Maya world at the time of the Maya collapse. But several assumptions that are problematic underlay this conclusion. First, there is a belief that the Maya trajectory is reflective of climatic records that have been collected from both outside and within the Maya area; thus, the more general record from the Cariaco Basin is often referenced (Kennett et al. 2012; Douglas, Brenner, and Curtis 2016) and differences in topography, wind, and shadow rainfall are not fully considered, nor is the potential impact of microclimates within various regions, even when the data appear to indicate that there was variability. Many of the known lake-cores across the Maya area provide different assessments of when droughts occurred (see Wahl et al. 2013; Wahl et al. 2014), and the records from the lakes in the central Petén (Lake Petén Itzá and Lake Salpeten) show either no variability or minor variability in rainfall records in the ninth and tenth centuries (Curtis et al. 1998; see also Rosenmeier et al. 2016). Second, there is often an uncritical use of climatic records, even when it is known that the data are suspect (e.g., Douglas, Demarest, et al. 2016). For instance, the original speleothem collected for the Macal Chasm (J. Webster et al. 2007) was too near the entranceway to accurately mirror climate, and the more recently collected Yok I speleothem (Kennett et al. 2012) is not mineralogically suitable for the kind of dating and analysis that has been done on it (Lachniet 2015). Yet, because of a lack of better data, these flawed records continue to be used (e.g., Douglas, Brenner, and Curtis 2016).

While Caracol clearly would have suffered from any long-term drought, the epigraphic and archaeological data from the site indicate that there is

no downfall associated with the drought cycle (Haldon et al. 2018), as suggested by Richard Gill and his colleagues (2007). The archaeological data instead suggest that the site moved to expansionistic modes at the height of each drought cycle (Iannone et al. 2014); in fact, the site was quite prosperous during the Terminal Classic period, a conclusion also derived for the outlying site of Minanha, north of Caracol (Iannone 2007). Furthermore, if the existing speleothem data (Kennett et al. 2012) are used, they show that the site was abandoned during a wet period (Lachniet [2015], however, has suggested that this speleothem is problematic). While any regionwide instability (which surely existed) would have been a problem for Caracol's sustainable adaptation and its economic interdependence on other sites, drought was likely only an ancillary cause to the overall Maya collapse (see also Douglas, Demarest, et al. 2016; Turner 2018; Turner and Sabloff 2012).

In terms of its population history, the site was maximally occupied in the waning years of the Late Classic period around 800 CE (Chase and Chase 2005b). Epigraphic data suggest the site's epicentral dynasty made a resurgence in the Terminal Classic (Chase and Chase 2007b), attempting to reinstitute a divine kingship that had been largely undone in 680 CE as a result of the Naranjo star war against Caracol (Chase and Chase 2003b; Chase and Chase 2020b). Iconographic portrayals and hieroglyphic texts from the Terminal Classic period indicate that Caracol's elite had entered into a series of alliances with nonlocal individuals (Chase and Chase 2015; Chase et al. 1991; Grube 1994). Faunal remains indicate that deer and small game were plentiful and that marine fish were being imported by the site's latest inhabitants (Teeter 2004). Artifactual items abandoned in the site's epicentral building show that long-distance trade was maintained until the end of occupation at the site (Chase and Chase 2003b). Archaeologically, there is a growth in disparities among the population in terms of access to resources. The site's elite adopted its own ceramic subcomplex and isolated itself from the general population (Chase and Chase 2004), which makes dating Terminal Classic remains problematic for the majority of the population (Chase and Chase 2008). At least five unfinished building efforts were ongoing at the time of the site's abandonment, and unburied dead on the summit of Caana and in the plaza fronting this complex appear to demonstrate that the epicentral collapse was sudden and quite final, implicitly suggesting that sociopolitical or ideological factors (that reversed previous symbolic egalitarian human development tendencies), or both, were responsible for the site's epicentral abandonment. Given the terracing within the agricultural field system, it is likely that some occupation continued in

the broader Caracol metropolitan area after the epicentral collapse, but this occupation is difficult to isolate archaeologically.

Conclusion

Caracol successfully modified its physical environment and managed the Late Classic sociopolitical landscape to its own advantage. The four key components of Caracol's settlement system (plazuela groups, causeways, constructed reservoirs, agricultural terraces), combined with a human development-oriented management strategy (symbolic egalitarianism), worked together to make a sustainable adaptation to an otherwise hostile environment. The settlement system and the spatial distribution of the plazuela groups served to keep the site's inhabitants relatively healthy. Garbage and night soil were recycled into building projects and the heavily modified landscape. The multicropped terraced agricultural system fed Caracol's population. The reservoir system ensured that water was available as long as there was rainfall—and the variation in topography of the broader Caracol region meant that rainfall was likely to occur somewhere within the metropolitan area with relative frequency. The causeway system promoted effective communication and the redistribution of resources from one part of the site to another; it is not too far-fetched to suggest that, if necessary, water itself could have been transported from rivers at the edges of the metropolitan area into the site core. Symbolic egalitarianism assured that Caracol's population at large shared in material well-being and a common identity. Thus, the site's overall settlement system was configured in concert with its environment for continued sustainability.

The archaeological data indicate that Caracol had a direct sociopolitical impact on both Tikal and Naranjo in the Late Classic period, incorporating both of these Guatemalan sites into its ritual and political sphere (for almost a century in the case of Tikal and for half a century in the case of Naranjo). While stripped of its broader political and ritual impact after 680 CE, Caracol still prospered until the attempted reassertion of dynastic rule in the Terminal Classic. We believe that human fallibility was responsible for Caracol's final abandonment.

It was the human intervention of a reassertive ruling dynasty at Caracol that altered the playing field, transforming a sustainable city into a shrinking one—and, by doing this, no longer buffering society from environmental and climatic change. These data suggest, first, the value in using multiple kinds of data; second, the importance of new techniques, such as lidar, in

the interpretation of the past; and, finally, the possibility that the past can provide us with powerful historic analogs to the present and future.

Acknowledgments

The Caracol Archaeological Project formally started excavations at the site in 1985 and has continued to conduct field research every year since then; the last 12 years of investigation have been funded jointly through the Alphawood Foundation and the three home institutions of the PIs—the University of Central Florida, the University of Nevada, Las Vegas, and now Pomona College/Claremont Graduate University, Claremont.. Detailed reports for each archaeological field season since 1996 may be found on the Caracol website (www.caracol.org); earlier field seasons are summarized in two monographs (Chase and Chase 1987; Chase and Chase, eds. 1994). None of the research reported here would have been possible without the support of the Belize Institute of Archaeology (previously the Belize Department of Archaeology) and the assistance of project members and staff. The Caracol Archaeological Project has been funded by the Ahau Foundation, the Alphawood Foundation, the Dart Foundation, the Foundation for the Advancement of Mesoamerican Studies Inc., the Geraldine and Emory Ford Foundation, the Government of Belize, the Harry Frank Guggenheim Foundation, the National Aeronautics and Space Agency, the National Science Foundation, the Stans Foundation, the United State Agency for International Development, the University of Central Florida, the University of Nevada, Las Vegas, and private donations to the UCF Foundation Inc., the UNLV Foundation Inc., and now Pomona College (Claremont, California).

7

The Monumental Aquascape of Kaminaljuyu

Water in the Archaeology of an Early Highland Site

BARBARA ARROYO AND LUCIA HENDERSON

Discussions of water management at the site of Kaminaljuyu (see Figure 1.1) have historically focused on water as a practical agricultural resource that supported the utilitarian needs of a large population. Lake Miraflores, around which Kaminaljuyu was originally built, fed a system of primary, secondary, and tertiary canals that irrigated a large agricultural area in the site's southern sector. It is generally believed that this resource came to an abrupt end around 200 CE when, due to a combination of overuse and drought conditions, Lake Miraflores desiccated completely, leading to a sitewide collapse at the end of the Terminal Preclassic period (Popenoe de Hatch 1997; Popenoe de Hatch et al. 2002).

Recent investigations, however, have dramatically altered this view. As this chapter argues, the hydraulic landscape of Kaminaljuyu was not just a practical concern. It was, instead, a multifaceted system in which water management took on a ritualized role in addition to its use as a practical resource. Furthermore, it is now clear that Lake Miraflores did not completely desiccate around 200 CE. Although it was certainly a diminished resource by this time, and although the site's inhabitants were pressed to come up with innovative solutions to decreased water levels, the lake continued to feed hydraulic systems at Kaminaljuyu through the Early Classic period.

In this chapter, the authors outline a new understanding of the hydraulic world of Kaminaljuyu, drawing on Barbara Arroyo's (Arroyo et al. 2015) reassessment of evidence from previous archaeological excavations at the site as well as new evidence from ongoing research undertaken by the Proyecto

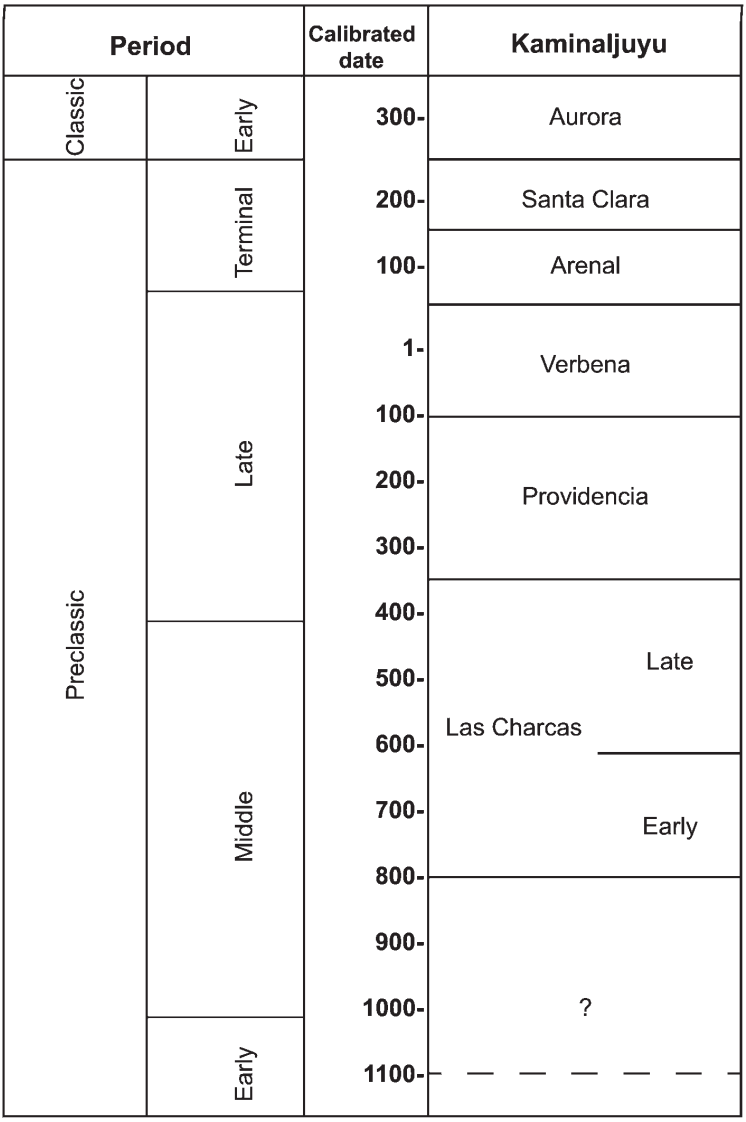


Figure 7.1. Chronology of Kaminaljuyu (after Inomata et al. 2014).

Zona Arqueológica Kaminaljuyu (ZAK). This research has revealed the presence of a ritualized system of waterways that guided water through the site's civic center, transforming sunken courts and plazas into artificial ponds and water features. The enduring importance of water at Kaminaljuyu, in both practical and ideological terms, is further emphasized by the presence of watery materials in royal tombs, in the prioritization of water

imagery in sculptural art, and, above all, in the continued emphasis on physically channeling, storing, and managing water throughout the lifetime of the site. A final introductory note to readers: the current chapter uses the recent, revised chronology published by Takeshi Inomata et al. (2014) for Preclassic dates (Figure 7.1).

Origins

From the very beginning, Kaminaljuyu was a site built around and about water (Figures 7.2 and 7.3). During the Early Las Charcas phase (ca. 800 BCE), the first inhabitants of Kaminaljuyu began to build a series of small structures around the southeastern edge of the now-extinct Lake Miraflores (Popenoe de Hatch et al. 2002; Valdés and Popenoe de Hatch 1996). These clay platforms, which likely once supported perishable structures, are oriented along a north–south axis and were apparently ceremonial in nature (Mound C-III-10 is one of the earliest of these). Unfortunately, little was documented during the few rescue projects that focused on these mounds, and most have since been destroyed by the urban expansion of modern-day Guatemala City. Regardless, it is clear that the first ceremonial occupation at Kaminaljuyu centered on Lake Miraflores (Michels 1979; Popenoe de Hatch 1997).

Material evidence suggests that the inhabitants of Kaminaljuyu came from two primary locations: Pacific coastal sites and the highland site of Naranjo, just three kilometers north of Kaminaljuyu (Arroyo 2010; Shook and Popenoe de Hatch 1999). Both populations would have brought with them a close social, economic, and ideological relationship with water.

Coastal Connections

The first complex societies along the Pacific coast of present-day Chiapas and Guatemala began to develop around 1700–1500 BCE (Arroyo 2001; Arroyo et al. 2002; Clark 1997; Clark and Blake 1994; Lesure 2011; Rosenswig 2010). These early complex societies were connected to the abundant resources associated with the region's lush environment of mangrove swamps and estuaries. Beginning in the early Middle Preclassic (ca. 800 BCE), people from these groups began migrating inland, first into the piedmont and later into the highlands. In general, populations settled near bodies of water, including lakes and lagoons (Arroyo 2001, 2003; Love 2002; Rosenswig 2010). Among these was the now-extinct Lake Miraflores, which appears to have attracted settlers beginning around 800 BCE.

Figure 7.2. Map of Kaminaljuyu showing the original Lake Miraflores extension.

Figure 7.3. Map of Kaminaljuyu with new interpretation of Lake Miraflores extension.

Throughout its early history, Kaminaljuyu exhibits direct affiliations with the coast. Kaminaljuyu's north–south site alignment, for example, correlates closely with south coastal sites such as Bonampak, Vista Hermosa, Los Cerritos, and Bálsamo (Bove 1989). The Preclassic pottery from the Las Charcas, Providencia, Verbena, and Arenal phases at Kaminaljuyu also shares many decorative modes with pottery from the Pacific coast, particularly the Mascalate and Guacalate phases (see Figure 7.1; Bove et al. 1993). Specialized early monument formats, including potbelly sculptures and pedestal monuments, are also shared between the two regions (Chinchilla M. 2001/2002; Guernsey 2012; Parsons 1986). These sculptural connections demonstrate that Kaminaljuyu was participating in a regional sculptural style from the late Middle Preclassic through the Late Preclassic, with its closest artistic affiliates at sites like Izapa and Takalik Abaj along the coastal piedmont (Henderson 2013; Inomata and Henderson 2016).

Finally, faunal analysis supports a close relationship between Kaminaljuyu's inhabitants and the Pacific coast. As a recent study by Kitty Emery and collaborators (2013) indicates, the Late Preclassic inhabitants of Kaminaljuyu not only relied on local freshwater resources but turned to coastal resources as well. Consumption of coastal fish is evidenced by remains like that of the marine snapper (Emery et al. 2013:401). Bony marine fish are also relatively common in the Terminal Preclassic and Late Classic periods, suggesting continuing contact with the Pacific coast during this time.

Connections with Naranjo

By ca. 800 BCE, Naranjo began to rise as one of the Guatemalan highlands' earliest major centers. Shared ceramic types and technologies, such as red-rimmed globular jars with tripod supports and zoned, punctuated surfaces, strongly suggest that the site was originally occupied by migrating populations from the coast (Arroyo 2010, 2018). The presence of plain monuments at Naranjo, including stela-altar pairs, suggests that its inhabitants also brought with them the tradition of uncarved monuments that arose along the south coast during the Middle Preclassic period (Bove 2011; Pereira 2010; Pereira, et al. 2007).

From ca. 800 to 400 BCE, Naranjo appears to have had a close relationship with Kaminaljuyu, which at the time was a much smaller subsidiary center. Around 400 BCE, however, Naranjo suffered dramatic depopulation and collapse, coeval with the rise of Kaminaljuyu as a major regional center (Arroyo 2010, 2018). Shared ceramic forms, figurine styles, and lithic

technologies suggest that populations from Naranjo likely joined the growing population of Kaminaljuyu during this time (Arroyo 2010, 2018).

Lake Miraflores: Changing Views of a Changing Resource

Although some details are still under debate, it has become clear that the traditional understanding of Lake Miraflores needs to be modified. Lake Miraflores is most often described as a large lake whose waters were exhausted by the inhabitants of Kaminaljuyu, who used them to feed massive agricultural irrigation systems (Barrientos Q. 1999; Popenoe de Hatch 1997; Popenoe de Hatch et al. 2002). In this view, overuse combined with a severe drought that occurred across Mesoamerica ca. 100 CE caused Lake Miraflores to dry up completely by 200 CE, contributing to a major collapse at the site (Emery et al. 2013; Popenoe de Hatch et al. 2002; Valdés 2006:77).

It is now clear that our understanding of Lake Miraflores and its role in the life of Kaminaljuyu requires two major revisions. First, the lake was much larger than previously believed. Second, although the lake had certainly diminished in size, its use appears to have continued after 200 CE, through the Early Classic period, and into the Late Classic period.

The first step in reassessing our understanding of Lake Miraflores and its impact on sociopolitical events at Kaminaljuyu is redefining the lake itself. Lake Miraflores is not a true lake (which requires a feeder and a drainage) but instead a fault-caused depression that collected annual rainfall and local spring water (Popenoe de Hatch 1997). Since it had no natural feeder, Lake Miraflores appears to have been particularly susceptible to environmental changes, such as droughts and, potentially, seismic activities (Popenoe de Hatch et al. 2002).

Recent excavations have shown that the original footprint of Lake Miraflores (compare Figure 7.2 to Figure 7.3) was much larger than previously believed (Arroyo 2015; Arroyo et al. 2015). In 2011, Arroyo and colleagues targeted an area for excavation that they believed might represent a northern extension of the lake (these excavations took place where the new Visitor Center at the Parque Kaminaljuyu archaeological site now stands; Arroyo et al. 2012). Although this area of the site had previously been marked as outside the boundaries of Lake Miraflores, excavations revealed surprisingly deep sediment layers. Subsequent soil analysis has conclusively identified these soils as lake sediments (Juan Leal, personal communication 2012; Arroyo et al. 2012), demonstrating that Lake Miraflores extended much farther north than previously assumed. Additional sediment analysis

revealed high phosphorus content, a marker for standing water in lakes and lagoons.

In 2014, the ZAK examined topographical maps in detail to determine the exact extent of the lake. This examination led to the production of a new site map with the outline of Lake Miraflores redrawn to account for its larger northern footprint (see Figure 7.3). The expansion of the known boundaries of the lake transforms it from a minor body of water measuring approximately 290,000 m^2 into a major one covering approximately 670,000 m^2, a change in scale that dramatically alters our understanding of the lake and its relationship with Kaminaljuyu.

The second important revision to scholarly understanding of Lake Miraflores is the conclusion that Lake Miraflores did not, in fact, desiccate completely by the end of the Terminal Preclassic period, a conclusion reached through reanalysis of previous excavations as well as new data collected during recent excavations by the ZAK. First, the mounds described in various publications as being built atop the lake's desiccated bottom appear instead to have been built along the shoreline, which was exposed as lake levels lowered (Valdés and Valladares 2014). Structures do not appear to have ever been built over the deepest portion of the lake. Second, archaeological remains indicate that Kaminaljuyu's inhabitants were still channeling water from Lake Miraflores through the site well into the Terminal Preclassic and Early Classic periods (this practice is discussed in more depth later in this chapter).

Third, the inhabitants of Kaminaljuyu continued to rely on freshwater lake fish for food long after 200 CE. As Emery and colleagues (2013) have discussed, the Preclassic faunal record of the site shows a high proportion of freshwater fishes that prefer well-oxygenated waters as well as water birds that prefer open shorelines (findings that correlate well with a partially forested lacustrine environment). Terminal Preclassic and Late Classic faunal remains, in contrast, include gar, a fish that thrives in poorly oxygenated, murky waters. Such findings correlate well with theories of significantly lowered lake waters during this time (Emery et al. 2013:409) while at the same time indicating that the lake remained in use into the Late Classic period.

Preclassic Irrigation Systems

By about 400 BCE, the inhabitants of Kaminaljuyu had begun to build agricultural canals in order to feed an extensive irrigation system (Barrientos

Q. 1997, 1999; Díaz 2016; Popenoe de Hatch 1997). The earliest of these, the Miraflores Canal, was carved into sterile soil during the Providencia phase (ca. 400 BCE, see Figure 7.1) and represents one of the earliest examples of sophisticated canal design in Mesoamerica (Valdés and Popenoe de Hatch 1996). This canal and its successors brought water to the southern sector of Kaminaljuyu, feeding a series of smaller channels that irrigated raised agricultural fields. As several authors have noted, these complex and sophisticated canal systems would have required planning and oversight (Barrientos Q. 1997, 1999; Popenoe de Hatch 1997:17; Popenoe de Hatch et al. 2002:105–107; Valdés 2006; Valdés and Popenoe de Hatch 1996).

By the Terminal Preclassic period, the lake's waters appear to have lowered rather drastically, perhaps partially as a result of the well-documented drought that occurred across Mesoamerica around 100 CE (Douglas et al. 2015; Velez et al. 2011). In response, technological innovations were integrated into new agricultural canal designs to cope with lower water levels. These are perhaps best illustrated by the remarkably complex design of the San Jorge Canal (built ca. 100 BCE). This impressive canal, measuring some 18 m at its widest point, used sluice gates and hydraulic jumps to control the velocity and quantity of water flow and is considered one of the most sophisticated hydraulic designs of its time (Ortloff 1997; Scarborough 2006:226).

Montículo de la Culebra

It is difficult to believe that seasonal rainfall and the runoff from freshwater springs could have provided Lake Miraflores with enough water to feed the site's massive irrigation channels while at the same time supporting Kaminaljuyu's large population. Precise population estimates are notoriously difficult for poorly preserved sites such as Kaminaljuyu. Recent excavations by the ZAK, however, indicate the population of central Kaminaljuyu was likely at least two to three times larger than the William Sanders and Carson Murdy (1982) estimate of 2,290 residents—an estimate based on large mounds alone. We now know that the lake had a much larger footprint than has previously been assumed, which means more water would have been needed to fill it. Where did all of this lake water come from?

Various sources of evidence together suggest that the giant, snaking mound called the Montículo de la Culebra was built as an artificial feeder stream for Lake Miraflores. Topped with an ancient aqueduct, this mound once stretched over 5–6 km, bringing water from the Río Pinula to the southern tip of Lake Miraflores (Luján Muñoz et al. 1988; Navarrete and

Luján Muñoz 1986; Ohi and Luján Muñoz 2001; Ortega et al. 1996; Valdés 2006:76, citing Jacinto Cifuentes, personal communication 1991).

La Culebra dates to the Middle Preclassic period (ca. 500 BCE). Subsequent additions and modifications took place during the Late Preclassic, with the final construction phase dating to the Early Classic (ca. 400 CE). The mound appears to have been designed and built not as one continuous construction but as a series of long mounds with a few deliberate breaks (Popenoe de Hatch 1997). These breaks were likely bridged by troughs made of wood or other perishable materials in order to create a functional, continuous aqueduct. Such a system would have been susceptible to damage by seismic activity, so it is possible the lowering of the lake waters was not only caused by overuse and drought but also by potential breakdowns in this delicate aqueduct system.

Arroyo's (2015) examination of pictographic maps that were drawn before the capital city was moved from Antigua to Guatemala City in 1776 indicate that a section of Lake Miraflores was still present at this time. One map describes the lake as "man-made," saying that it could be "filled and emptied as needed" ("Laguna permanente que se llena y se bacia segun convenga"). Other maps show La Culebra in association with the mounds of Kaminaljuyu. Although at this early time the map illustrator did not know that these small hills were precolumbian structures, they represent the site of Kaminaljuyu with relative geographical precision (Arroyo 2015:Figure 4). This appears to be the first image of Kaminaljuyu preserved in the historical record (see also Navarrete and Luján Muñoz 1986).

When the capital city was moved from Antigua to its present location in 1776, the Montículo de la Culebra was pressed back into action, forming the substructure for a new stone aqueduct. The spaces between the noncontiguous mounds were filled with large masonry columns to support new stone channels above. Once again, the mound served to channel water from the Pinula water source to feed the growing population of Guatemala City. Interestingly, historic documents describing the move of the capital to Guatemala City cite the availability of water as an important factor in choosing this location (Navarrete and Luján Muñoz 1986).

Even today, the Río Pinula provides a major water source for Guatemala City. The result is a complex palimpsest of water management that spans a thousand years—a precolumbian system buried beneath a colonial system buried beneath a modern system—all designed with the purpose of channeling water from the Río Pinula to the city center.

The Preclassic Kaminaljuyu "Aquascape"

Through the reassessment of old archaeological data, visits to salvage operations (Alvarado and Díaz 2014), and targeted archaeological investigation, Arroyo (Arroyo et al. 2015; Díaz 2016) has found convincing evidence for the existence of a network of nonagricultural canals at Kaminaljuyu (i.e., canals that are not associated with the site's southern agricultural production zone but are surrounding large mounds). These small canals, which drew water from the lake, appear to have been used to flood sunken plazas throughout the site (see Figure 7.3). Some of these canals may have served the practical purpose of irrigating small gardens or orchards. The majority, however, appear to have been symbolic, aesthetic, or ritual in nature, transforming the civic landscape into a sophisticated network of miniature waterways and artificial ponds. That these watery areas were repeatedly used as sites for the deposition of decapitated and dismembered bodies as well as severed heads (Díaz 2016; Hermes and Velásquez 1996) supports the conclusion that these were highly charged ritual locations rather than utilitarian catchment or storage systems. The civic center of Kaminaljuyu thus paired the built landscape of temples, platforms, and plazas with what the authors term an "aquascape," a constructed environment focused on the ritualized flow of water around the site.

Unfortunately, the rapid and destructive growth of Guatemala City, which has destroyed the majority of Kaminaljuyu, combined with the limitations of past archaeological projects (many of which did not understand the extent of the site's hydraulic systems and did not document their findings) have left us with an extremely fragmentary record of these systems. It is therefore difficult to move beyond generalities when discussing them. We do not, for instance, know if sunken courts were flooded at all times or if they were periodically filled and emptied. Now that they have been identified as notable features, however, the hope is that future excavations will investigate these canals and sunken courts more fully and record them in more detail. Such data will provide future scholars with much-needed specificity, allowing them to address the particulars of this aquascape in more depth.

The earliest of Kaminaljuyu's ritual canals date to the beginning of the Late Preclassic period, during the Providencia phase (ca. 400 BCE), reaffirming the deep connection between Kaminaljuyu and water. Initially, open channels were cut into the talpatate (the decomposed volcanic tuff

that forms the sterile surface of the Valley of Guatemala) and covered with stone slabs to guide water between mound complexes (Díaz 2016). Although they have not been studied in depth, it is quite possible that some of the long, trough-shaped stones currently housed in the Museo Nacional de Arqueología y Etnología in Guatemala City played a part in these early hydraulic systems (Parsons 1986:Figures 48–49).

Although many of the sunken courts of Kaminaljuyu are often referred to as "ball courts," evidence suggests that they were not originally built for the ballgame. Only four of the 12 areas scholars have designated "ball courts" contained Late Classic period ball court markers (Arroyo and Paiz 2015; Parsons 1986), and none of the Late Preclassic construction phases of these spaces exhibit the architectural features usually associated with the ballgame, such as I-shaped courts, sloping facades, and spectator benches.

It appears instead that these sunken courts were originally tied to water use. They are all positioned close to extensions or sections of Lake Miraflores and some (such as Ballcourts B and F) have water channels in their lowest (i.e., earliest) construction levels. Excavation notes taken by A. Ledyard Smith (1942), for instance, show a water channel topped by thin stone slabs running across the bottom of Ballcourt B, suggesting that it originally functioned as a water feature. This evidence indicates that at least some of Kaminaljuyu's small sunken courts were originally involved in water management and storage, with some retrofitted centuries later during the Late Classic period to serve a new purpose as ball courts. Such a pattern is not unique to Kaminaljuyu. Sunken courts at various sites across early Mesoamerica appear to have been flooded (e.g., Gazzola 2017).

One of the most important sunken courts at Late Preclassic Kaminaljuyu was the Palangana. During the Late Preclassic period, before the lowering of the lake's waters, the southwestern corner of the Palangana was part of, or very close to the edge of, Lake Miraflores (Ajú 2017). Recent archaeological excavations have uncovered a series of water channels that directed water from this portion of the lake to the deeper levels of the Palangana plaza. Soil samples from the lower Palangana court prove that this area once held standing water, indicating that it served as an artificial pond or pool (Ajú 2017). This supports earlier claims by Cheek (1977) that the court was once flooded.

The Acropolis also shows close connections to water. Recent analysis by Arroyo and Gloria Ajú (2017) with the ZAK project suggests that the Acropolis was built on land that was originally beneath the waters of Lake Miraflores (see Figure 7.3). As lake levels lowered (likely sometime during

the Middle Preclassic period), this land was exposed, revealing a freshwater spring. The first phase of the Acropolis was built atop this spring around 100 CE, marking the water source as a sacred place. Discovered in 1942, this area was excavated by Gustavo Espinoza, whose field notes have since been lost. As a result, there is no additional information available about it. Nevertheless, we can confidently argue that the Acropolis, the largest and most important building of Kaminaljuyu, was a construction motivated by and focused on water.

Freshwater springs appear to have been focal points of activity throughout Kaminaljuyu, where considerable time and energy were spent engineering and ensuring easy access to fresh, potable water sources. Investigations by the ZAK project of the spring-filled barrancas to the east of the modern Kaminaljuyu archaeological park indicate that these ravines were cut and modified by the site's ancient inhabitants to give them easier access to freshwater sources. Channels cut into the barranca faces guided fresh water to small reservoir systems, giving the site's populace access to potable water year-round (Arroyo et al. 2012; Fitting 1979:502–503; Michels 1979:502–503; Popenoe de Hatch 1997:93). Recent surveys carried out by the ZAK project have documented several water springs that are still in use (Estrada 2017). Despite modern-day contamination, these springs are viewed as important features of the landscape and are valued by indigenous residents of the area (Estrada 2017).

The Early Classic

Disruption

As noted earlier, scholars have historically assumed that Lake Miraflores dried completely around 100–200 CE. The lake's drying, however, is not linked to a secure radiocarbon date and is thus difficult to firmly establish chronologically. It is clear from various avenues of study that the lake's waters had begun to lower substantially by the end of the Terminal Preclassic period (ca. 150 CE) and that this pattern continued through the beginning of the Early Classic period (ca. 250 CE). The lake, however, does not appear to have dried completely until well after the eighteenth century.

Paleoclimatic data indicates that a major drought or drying period affected all of Mesoamerica during the Terminal Preclassic period (Dunning et al. 2012). According to a lake core taken from Lake Amatitlán, 25 km south of Kaminaljuyu, this drought was particularly severe in the highlands

from ca. 100 BCE to 100 CE (Lohse et al. 2015; Velez et al. 2011). Archaeological evidence indicates that Kaminaljuyu's canal builders were responding to lowering lake waters with new technologies by the Terminal Preclassic period, and new structures began to be built along the drying shores of the lake.

As has been mentioned, in addition to factors associated with climate change, there is also the possibility that damage to the lake's feeder source may have exacerbated the lowering of the lake's waters. It is not difficult to imagine seismic activity, so common in this region, affecting the flow of water along the Montículo de la Culebra aqueduct. Seismic activity is often poorly reflected in the archaeological record, so this possibility must be acknowledged as speculative (for discussions of seismic activity in the archaeological record, see Ortloff [1997] and Scarborough [1994, 2003, 2006:233]).

At the end of the Terminal Preclassic period (ca. 100–150 CE) there appears to be sitewide disruption at Kaminaljuyu. Arroyo and her team (2015), for instance, have found increasing evidence for heightened ritual activity associated with massive dedication or termination rituals in which thousands of ceramic vessels were smashed and materials were burned, creating thick deposits of broken sherds and ash (Ajú et al. 2015). Such activities suggest significant ideological upheaval. These rites are associated with a dramatic decrease in the site's population, reflected in settlement pattern data and the archaeological record (Shook and Popenoe de Hatch 1999), and coincide with a near total cessation of stone monument production. The presumed total Terminal Preclassic collapse of the site, however, may be overblown. Recent excavations demonstrate that ceramic modes are continuous; there are no major changes in utilitarian wares; and sections of the site continue to be occupied by what appears to be a local population (Arroyo et al. 2016; Ajú 2017).

Continuity

Several avenues of research demonstrate that water remained available at Kaminaljuyu and continued to influence the lives of the site's inhabitants during the Early Classic period. First, a number of Early Classic technological innovations indicate that water still played an important role at the site during this time. For instance, narrow ceramic tubes replace the larger talpatate cut channels that guided water around the civic center of the site during the Preclassic period (Figure 7.4). One set of these tubes was discovered between Mounds C-III-9 and D-III-10. Photographs by Gustavo

Figure 7.4. Photograph of excavated canals south of C-IV-4.

Espinoza and excavation notes by Edwin Shook (1953), housed at the Universidad del Valle, Guatemala, show that these tubes guided water into a depression to create a small pond. Whether the engineers of Kaminaljuyu were using this depression to collect and distribute rainwater or whether they were redirecting lake water to flood it as a water feature is unknown. In general, however, archaeological evidence supports the idea that sunken

courts continued to be used as small ponds or water features during the Early Classic. Ceramic pipes and fragments have also been collected by Arroyo's archaeological team at the Acropolis (Rojas 2013) and the Palangana (Ajú 2017).

Additional Early Classic technological innovations related to water have also been discovered at the site. For example, Early Classic stone-lined channels guided water from the more elevated, western section of the Palangana's lower court to its lower, eastern portion. In addition, large pits lined with clay began to be used to hold water for large-scale food production areas in the southern agricultural sector of the site (Popenoe de Hatch 1997; Valdés 2006:76). This appears to have been a reaction to a diminished irrigation system, which could no longer serve these areas with lake water.

Second, as discussed earlier, the faunal record of Kaminaljuyu indicates that lake waters lowered but were still present during the Classic period. This is evidenced by a change in diet from freshwater fish and water birds during the Preclassic to fish like gar during the Terminal Preclassic and Late Classic periods (Emery et al. 2013). Gar is a fish that survives well in less-oxygenated, murky waters, and its presence in the archaeological record may indicate that the canals were choked with high levels of algae and sediment at this time. This, alongside the bones of quail and rabbits, which prefer open habitats, and increased numbers of deer, which prefer the boundary zones between field and forest, coincides with intensified agricultural practices, deforestation, and lowered lake levels (see also Velez et al. 2011). The presence of species like mud and musk turtles and crocodiles in the Early Classic tomb assemblages of Mounds A and B (Kidder et al. 1946) provides additional evidence that freshwater resources existed at Kaminaljuyu, although they may have been significantly diminished by this time.

Third, a continued architectural focus on water supports the idea that Early Classic Kaminaljuyu was still a watery site. As was mentioned earlier, for example, the first construction phase at the Acropolis (ca. 100 CE) was sited specifically to mark a springhead as well as the original northwestern limit of Lake Miraflores. Sunken plazas also continued to be flooded by lake waters during the Early Classic through the use of ceramic pipes. The extent of architectural efforts related to hydraulic projects during the Early Classic period suggest not just a continuation but perhaps even a resurgence of the role of water in the life of Kaminaljuyu during this time. As a final point, it is important to reiterate that Arroyo's (2015) examination of

colonial-era maps reveals that the lake was still present during the Historic period.

Discussion

New data from Kaminaljuyu suggest a close intersection between water as a practical resource and water as an ideological substance. Alongside—and likely in part due to—its importance in agricultural success, water appears to have played a pivotal role in not just the site's physical layout—both its monumental landscape and sophisticated "aquascape"—but in ideological structures and political claims to power.

For instance, through their diverse and complex hydraulic construction efforts, the inhabitants of Kaminaljuyu artfully integrated their site within their broader natural environment. The pyramids that edged Lake Miraflores and the temples that skirted the reflective surfaces of flooded plazas and sunken courts would have risen like mountains from lake waters, perfectly recreating the highland landscape surrounding Kaminaljuyu (see Benson 1985; Dunning et al. 2012; Fash and Davis-Salazar 2006:134; Vogt 1981). Echoing sacred places like nearby Lake Amatitlán and the more distant Lake Atitlán, Kaminaljuyu was transformed into a similar sacred landscape. As such, the site embodied the great organizing principle of "water mountain," encountered in the Maya *witz* (Stuart 1987; Vogt and Stuart 2005) and its analog, the Nahuatl *altepetl* (Lockhart 1992). This cosmic model was tied to humankind's two most basic requirements, earth and water, that together allow for civilized life (see, for example, Fernández and García 2006; Fash and Davis-Salazar 2006:135).

Given the sophistication of its hydraulic systems, it is not surprising that expressions of power within Kaminaljuyu often took the form of declarations of control over the watery landscape. Royal tombs at Kaminaljuyu provide a particularly clear example of the ways in which political power was ritually solidified and articulated in physical form. It is true that the contents of these tombs include a wealth of nonaquatic materials, including the remains of dogs, jaguars, and other offerings (Kidder et al. 1946; Shook and Kidder 1952). Materials related to aquatic themes, however, are particularly impressive for their consistency, density, and quantity (Kidder et al. 1946; Shook and Kidder 1952). Although water was clearly not the only concern expressed in the funeral rites of Kaminaljuyu's kings, it was certainly one of the primary foci of these ceremonies (see Henderson 2013).

Water also comes to the fore as the single most prevalent iconographic theme in the sculptural record of Kaminaljuyu (Henderson 2013). In bas-relief sculpture, artists placed a unique focus on the representation of different supernaturals associated with different forms of water. Furthermore, many major sculptures at Kaminaljuyu tied the iconography of rulership and power very specifically to aquatic themes, surrounding images of rulers with water deities and symbols related to water. In this way, rulers were visually anchored to the aquatic landscape over which they held sway (Figure 7.5).

Interestingly, one finds a close intersection between archaeological contexts and iconographic content. Sculpture 133, for example, broken and partially effaced after its original use during the Terminal Preclassic period, shows a ruler wearing a headdress of water god faces. This sculpture was found in the southern part of the Palangana, associated with a huge Early Classic stone deposit (Ajú 2017). This deposit was apparently cut into the plaza floor to create a pond with a stone-lined bottom. It is possible that the large crocodile (Sculpture 2) and potbelly (Sculpture 203) that Lothrop (1926) found in the Palangana were discovered on this axis as well, although this is impossible to confirm. According to Miguel Orrego (personal communication 2014), who participated in Acropolis excavations with Gustavo Espinoza in the 1960s, a large toad altar (Sculpture 105) was found at the corner of the archaeological park near Mound C-II-IV and was similarly associated with a stone drainage of some kind.

Conclusion

Careful review of past projects, targeted present-day excavations, and cross-disciplinary collaboration have dramatically changed our understanding of Kaminaljuyu. This was a site founded around water, in both a physical and metaphorical sense. Its very first inhabitants, who appear to have originated from the south coast, would have brought with them a deep practical concern with and ideological focus on water, a focus we see throughout the history of Kaminaljuyu.

Recent archaeological investigations have shown that, during the Preclassic period, Lake Miraflores was nearly twice as large as previously believed. It can now also be confidently argued that the inhabitants of Kaminaljuyu built one of the largest earthen constructions in the ancient Americas in order to feed this lake: the Montículo de la Culebra. Perhaps most exciting is the discovery of an entirely new hydraulic system that channeled water

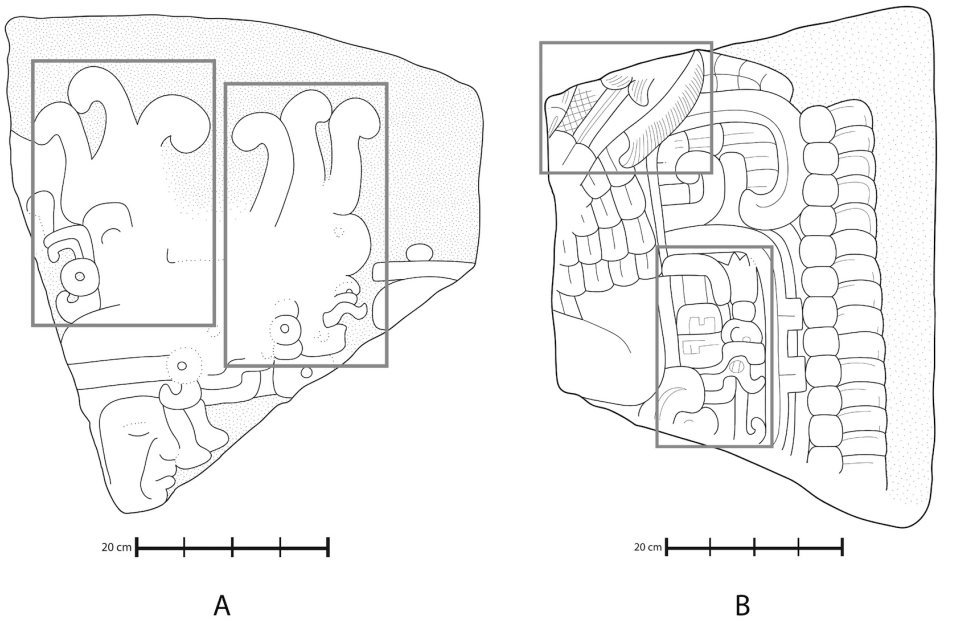


Figure 7.5. Bas-relief sculptures showing Kaminaljuyu rulers with water imagery: (*A*) Sculpture 133, showing a king with water gods in his headdress; (*B*) Sculpture 202 (upper fragment), showing a ruler carrying a fish scepter and wearing a water god mask in his backrack; (*C*) Sculpture 24, showing a ruler with a shark atop his headdress (drawings by Lucia R. Henderson).

from Lake Miraflores through the site's civic center to fill sunken courts and plazas. The monumental landscape of Kaminaljuyu was thus matched by an equally monumental "aquascape" composed of artificial waterways, lakes, and ponds. This hydraulic landscape closely mimicked the sacred landscape that surrounded Kaminaljuyu, one in which imposing volcanoes rose from shining lakes in a striking visualization of "water mountain."

New evidence also alters our understanding of the desiccation of Lake Miraflores, demonstrating that the lake did not completely dry up as was previously assumed and instead continued to play a part in the life of the site throughout the Early Classic period. Rather than prompting sitewide collapse, the receding waters appear to have instead spurred the development of new technologies associated with hydraulic systems. This is perhaps best illustrated by the use of ceramic pipes to more efficiently guide water around the city center. Overall, although the lake was diminished due to overuse and drought, water continued to play a critical role in the life of Kaminaljuyu during this time.

Water also finds enduring expression in the art historical record as well as in the material record associated with ritual events at Kaminaljuyu. In stone sculptures, ceramic vessels, and in tomb furnishings, one encounters a consistent focus on water, demonstrating the closely intertwined concepts of water as both a practical resource and powerful ideological substance.

In sum, although one might think that the scarcest resources would demand the most energy and focus, it was instead the most prevalent resource (water) that appears to have structured daily and religious life at Kaminaljuyu. Water was, in a physical sense, everywhere. From Lake Miraflores to Lake Amatitlán, to the rivers that flowed from the mountains to the coast and the canals that flowed to the agricultural fields, not to mention the thundering storms of the rainy season, Kaminaljuyu was surrounded by water in all its myriad forms. New research is providing insight into the ways in which this watery world was integrated into belief systems and ritual practice at Kaminaljuyu.

As a site that has suffered depredation and destruction over the course of two centuries, Kaminaljuyu holds its secrets closely. Detailed and focused analysis by Arroyo and the ZAK project team, however, has brought both new and old evidence to light that dramatically changes our understanding of this site. Our hope is that this discussion will provide a basis for further research and debate and that Kaminaljuyu will continue to tell its stories in the years to come.

Acknowledgments

This work was possible thanks to the generous support of the Alphawood Foundation. A group of young Guatemalan archaeologists including Gloria Ajú, Josué Álvarez, Javier Estrada, Lorena Paiz, Henrry Rodríguez, and Emanuel Serech have been part of the ZAK team and directly involved in the field work, without whom this work would not have been possible. Antonio Prado was also enormously helpful in aiding the Kaminaljuyu research project by closely examining topographic changes in the landscape for the identification of the ancient lake shoreline.

8

All the World's a Stage

The Late Classic Built Environment of Chan Chich, Belize

BRETT A. HOUK AND ASHLEY BOOHER

The Chan Chich Archaeological Project has investigated the ancient Maya site of Chan Chich, Belize for 13 field seasons between 1996 and 2019, the last four of which Alphawood Foundation funded. The project has researched a wide range of topics at the site, but a primary focus of the Alphawood research has been to investigate the development and nature of Maya urbanism. More specifically, the project studies the relationships between rulers, their architectural complexes, and the process of city planning and building among the ancient Maya. While the cultural landscape at any large Maya site comprises a variety of urban features including monumental architectural complexes, pathways, residential courtyards, agricultural fields, workshops, marketplaces, and water management features, to name but a few, in this chapter we are specifically interested in the monumental epicenter of Chan Chich, where the largest and most impressive constructions are found (Figure 8.1).

Chan Chich has a long history of occupation, beginning as far back as the Middle Preclassic period and extending to the Terminal Classic period (Houk 2015). During this roughly 1,750-year span from about 900 BCE to 850 CE, the rulers and residents of Chan Chich transformed their settlement from a small agricultural village into a moderately sized Maya city with impressive monumental constructions. Our work has documented two major periods of construction that significantly modified the core of the site: one in the Terminal Preclassic period and another in the Late Classic period. The former occurred around the time a divine king apparently ruled from the Upper Plaza (Houk et al. 2010), but this chapter focuses on

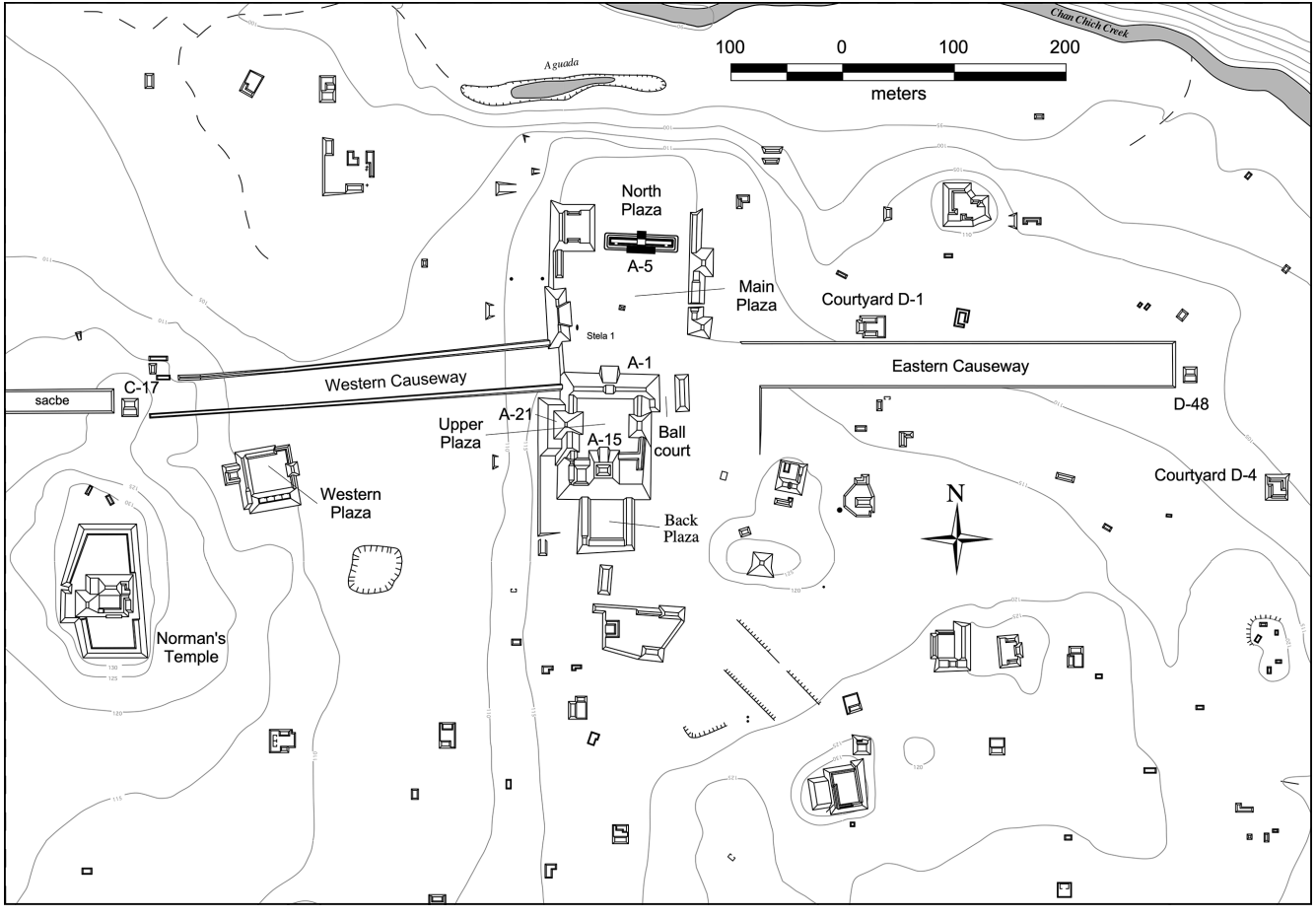


Figure 8.1. Map of Chan Chich, Belize (map drawn by Brett A. Houk).

the latter period of construction around 650 to 750 CE during the Late Classic period. Although plazas, buildings, and causeways may have had multiple functions, we use excavation data, comparisons to other sites, and depictions in Maya art to argue that the Late Classic rulers of Chan Chich designed some of their monumental architecture to function in part as the theater for public rituals and spectacles, including processions. We suggest that competition drove the political need to host public spectacles, which in turn influenced many site-planning decisions and shaped the monumental landscapes at Chan Chich and other sites in the region during the Late Classic period.

Public Spectacles and the Ancient Maya

In the field of archaeology, performance theory has been used to examine how rulers in premodern societies generated political power and created a sense of community by hosting large public events. Takeshi Inomata and Lawrence Coben (2006:11) propose that large, centralized polities could not have developed anywhere "without frequent public events, in which agents of political power presented themselves in front of a large number of spectators," who shared in the performance through their presence.

While public events can encompass a wide range of actions and occur at many scales, in this chapter we focus on large-scale public events, which Inomata (2006a, 2006b) and Inomata and Coben (2006), among others, refer to as "spectacles." One of the characteristics of spectacles is that they potentially involve not only multiple performers but perhaps thousands of spectators as well (Inomata 2006a:807). Among the ancient Maya, spectacles could include theatrical performances ranging from dances, to a ball game, to a formal procession, complete with musicians and elaborately costumed elites. While costume, motion, and color would have been important elements of spectacles, so too would have been sound and smell, as musical instruments, singing, and burning incense would have enhanced the sensory experience (Houston 2006).

Such performances, regardless of their constituent elements, all shared the same need for space, both a stage for the performers and a viewing area for the spectators (see Inomata 2006b). Inomata (2006a, 2006b) argues that plazas at Maya sites functioned as both stages for various performances and space for community members to gather and witness the performances. Similarly, he proposes that the wide causeways at Tikal functioned in part "as additional theatrical stages" as the city's population exceeded

the capacity of Tikal's plazas (Inomata 2006a:817). These causeways "were probably stages for processions by elites, which may have been viewed by a large audience occupying spaces along their edges" (Inomata 2006a:817).

Planning, staging, and hosting a large public event would have been complicated and time-consuming endeavors for the ruling elite of any given polity, so there must have been some benefit for the ruler to put on a spectacle. Inomata (2006a:818) argues that hosting mass spectacles was a critical political tool: such events forged community identity and integration and facilitated economic and social connections, which were otherwise lacking in the dispersed, rural, and potentially mobile non-elite that made up the vast majority of a Maya polity's population. Furthermore, he argues that "it is probable that theatrical performance merged inseparably with polity administration" in the Classic period, and "the preparation and organization of theatrical events, along with the acquisition of related materials and the construction of theatrical spaces, were probably a significant part of [the] work of court officials" (Inomata 2006b:213).

Spectacles would have been one of the things that attracted the rural population to cities in the first place (Hutson 2016). In part, this was due to multiplicity; "unstructured contact with strangers," which provides excitement, offers the possibility for new social contacts, and promotes "the expansion of social capital" (Hutson 2016:22). However, on another level, the monumental landscape of the city itself would have attracted people because "monumental architecture is undeniably salient" (Hutson 2016:185). In other words, towering temple-pyramids, expansive plazas, massive range buildings, and even causeways were so different from the other types of architecture the rural Maya encountered each day that being near them "arouse[d] perception" and was "therefore pleasurable" (Hutson 2016:185). Finally, commoners may have contributed to the construction of the very architecture used as stage and viewing stand, and thus felt a personal connection to the monumental landscape and the performance itself (see Hutson 2016:181). Spectacles offered "a spiritual and social life that was more striking and attractive" than that experienced on a regular day in the hinterlands, and the monumental architecture of the city contributed to this feeling (Hutson 2016:195).

Evidence for Late Classic Spectacles and Processions in Art

Inomata (2006b), Scott Hutson (2016), and others reference colonial accounts of large spectacles being held in plazas, but an excellent contemporary example is found in the Late Classic murals at Bonampak, Mexico. The

murals, which occupy three rooms in the same building, depict an elaborate Maya spectacle complete with musicians, dancers, and costumed participants. The murals in Room 1 show two processions of musicians, which converge on the south wall of the room. The troupe includes a trumpet player and percussionists playing rattles, drums, and turtle shells (Miller and Brittenham 2013). In the same room as the musical procession is a depiction of a group of costumed individuals, dressed as a crocodile, a giant crustacean, and individual deities (Miller and Brittenham 2013). The scenes of the procession show the performers, not the audience, leaving the viewer of the murals with the same perspective the original audience enjoyed. The murals also show us that much of the action took place on stairways, and Mary Miller (1986:115) convincingly argues that the murals depict actual stairways at Bonampak.

Inomata (2006b:199) proposes, based on Miller's observation, that "ample stairways were designed not only for access to the buildings but also for theatrical effects." As in the case of the spectacle shown in the murals at Bonampak, stairways could elevate performers, making them visible to an audience in the plaza, and, in the case of plaza-based ceremonies, could serve as grandstands for the spectators (Inomata 2006b:199). The important conclusion from this observation is that the occasional use of stairways as a stage or viewing stand affected architectural design and compelled some architects to design much broader stairways than would have been needed for simple access.

Other Late Classic evidence for spectacles, particularly processions, may be found in the graffiti at Tikal. A number of images show retainers carrying large palanquins bedecked with a statue towering over a seated ruler (see Trik and Kampen 1983). Witnessing this undoubtedly real event affected several spectators so profoundly that they felt compelled to record it in graffiti. Rulers are similarly shown on palanquins in carved lintels at the site (Sharer and Traxler 2006) and on Late Classic polychrome cylinder vessels (Halperin 2014:60).

Archaeological Evidence for Processions

As described below, Chan Chich and Xunantunich, an important Late Classic center in the Belize River Valley (see Brown and Yaeger, Chapter 14 this volume), share many similarities in terms of architectural layout, and Angela Keller's (2006:612) research on the form, function, and meaning of the causeways at Xunantunich represents the best archaeological evidence for intrasite causeways' functioning as "stages for ceremonial performance."

Xunantunich is best known for El Castillo, a 39 m high palace complex anchoring the southern end of the site core (Leventhal 2010:80–81). Two causeways enter the plaza in front of El Castillo: Sacbe I from the east and Sacbe II from the west (see Figure 14.5). The former is a 1 m high, 15 m wide elevated feature lined with low parapets along its margins that ultimately terminates at Group D to the southeast—the road runs 140 m east from the plaza before turning south for 150 m. The latter is a 40 m wide, 0.5 m high road, also lined with parapets, that terminates at Structure A-21, 135 m west of the plaza (Keller 2010:Table 9.1).

Keller (2006) excavated "clearing units" along the edges of the causeways where she thought trash might accumulate. Importantly, she found a partially reconstructable ceramic drum near Sacbe II in an apparent dump and subsequently identified a small number of probable drum sherds along both causeways. As she notes, "these drum pieces remain some of the only documented instrument fragments found outside of special deposits and in association with their probable use locations" (Keller 2006:610).

Keller (2006:610, 612) also found other types of artifacts along the causeways including a chert eccentric, a pyrite mirror fragment, a marine shell pendant, a jade bead, portions of ceramic bowls, and obsidian blades. Some of this debris she interprets as bits of costumes lost during processions, but some she construes as the remnants of rituals conducted along the procession route (Keller 2006:610). Perhaps, by stopping the procession along its route to perform some offering or ritual, the participants could engage an even larger number of spectators.

Keller's (2006) investigations at Structure A-21 produced evidence that performances on the causeways involved the termini structures. Along with censer fragments and sherds from offering bowls found in front of Structure A-21, excavations also recovered drum sherds from the structure's platform and stairs and concluded that "the rituals enacted on Structure A-21 were directly associated with musical performance along the causeways" (Keller 2006:452).

Chan Chich

Chan Chich is in northwestern Belize, very near the modern border with Guatemala. The major architecture at the site occupies a series of low hills overlooking Chan Chich Creek. In terms of size, Chan Chich is the seventh-largest ruin in Belize, based on the area covered by its site core, and is part of a line of large sites in northern Belize that roughly parallel the

border with Guatemala, extending from La Milpa in the north to Xunantunich in the Belize River Valley (Houk 2015:Table 10.1).

The Main Plaza and the Upper Plaza dominate the monumental architecture at the site. The Main Plaza covers 13,080 m^2 and is the third-largest plaza in the region (Garrison 2007:Table 6.3). Structures surround it on all sides, with formal and informal access points created by gaps between buildings. Structure A-5 divides the Main Plaza from the North Plaza, which is a less formal architectural space but clearly shows evidence of modification and use, perhaps as a marketplace. From the northern end of the North Plaza to the southern end of the smaller Back Plaza, which is tucked behind and below the Upper Plaza, the contiguous monumental architecture extends roughly 350 m.

Situated approximately in the center of this line of plazas and buildings is Structure A-1, the largest building at Chan Chich. This 70 m long and 13 m high mound divides the Main Plaza from the higher Upper Plaza. Separated by a central landing, Structure A-1 supports two once-vaulted buildings on its summit—tandem-range buildings each with four rooms facing the Main Plaza and four rooms facing the Upper Plaza (Herndon et al. 2014).

The Upper Plaza houses the tomb of an early king at the site (Houk 2015; Houk et al. 2010) and, by the Late Classic period, served as the site's acropolis. Structure A-15 is the tallest building at the site and occupies the southern part of the plaza. It rises 15 m above the Upper Plaza and over 25 m above the Back Plaza to the south. Structure A-21, a smaller temple-pyramid, occupies the western part of the plaza. Multiple looters' trenches pierce the two pyramids, revealing older architectural phases covered by the final Late Classic period buildings.

Two causeways with contrasting architectural styles enter the Main Plaza from the east and west in front of Structure A-1. The Eastern Causeway is a 40 m wide, elevated *sacbe* that extends for nearly 400 m before terminating at a low mound, Structure D-48. The causeway connects to the southeastern corner of the Main Plaza at a gap between the ball court and Structure A-9, one of two small temple-pyramids that line the eastern edge of the plaza. The Western Causeway is composed of two parallel, linear mounds or parapets defining a 40 m wide corridor between them. Where the causeway meets the Main Plaza, it is elevated slightly, but as it extends west it appears to become a ground level pathway defined entirely by its bordering parapets (Booher 2016a). Excavations of the northern mound uncovered the base of a 1.4 m thick masonry wall composed of cut limestone blocks

with a cobble wall core and preserved as high as 45 cm above the causeway's surface (Booher and Nettleton 2014:64). It is unclear if the parapet once supported a wooden wall. While that is a possibility, it is also possible the walls served as seating areas for spectators. The Western Causeway extends from the southwestern corner of the Main Plaza in the gap between Structure A-1 and Structure A-2, running west for approximately 380 m before terminating at an isolated hilltop mound, Structure C-17. The causeways were both built in the Late Classic without antecedents (Booher 2016a; Booher and Nettleton 2014).

The site's ball court occupies a level platform that extends off the Eastern Causeway in the southeastern corner of the Main Plaza. The ball court exhibits an unusual style with its western structure attached to the base of Structure A-1 and a freestanding eastern structure. Like most courts in the eastern lowlands, Chan Chich's ball court is oriented north–south (Houk 2015).

Late Classic Chan Chich

Like many of the sites in the eastern lowlands, Chan Chich experienced something of an architectural fluorescence in the Late Classic, and it was during this time period that the final plan of the site took shape with a series of significant construction efforts. Although the excavation sample within the Main Plaza is small, available data suggest a Late Classic construction episode raised the plaza floor to its current level (Houk 1998, 2000). Renovations to Structure A-5 at the north end of the plaza resulted in its final form: a long, narrow platform, capped by a largely perishable superstructure and accessed by central stairways on its northern and southern faces (Herndon et al. 2013). Structure A-1, the massive building dividing the Upper Plaza from the Main Plaza, was expanded into its final configuration (Herndon et al. 2014), other buildings around the Main Plaza were either constructed or enlarged (Houk 2015), and the ball court was modified into its final form (Ford 1998).

Also during the Late Classic, the city's planners oversaw the construction of the Eastern and Western Causeways (Booher 2016a), as noted previously. Excavations confirmed that both causeways represent single construction episodes (Booher 2016a).

Like the Main Plaza, the Upper Plaza achieved its final form during the Late Classic. In the southern two-thirds of the plaza, the deposition of approximately 1 m of fill elevated the plaza surface to its present level. Renovations to the structures surrounding the plaza accompanied this effort,

and excavations and data from looters' trenches have documented apparent Late Classic renovations to Structures A-13, A-15, A-18, A-20, A-21, and A-22 (Houk 2015). Access to the plaza became more restricted during the Late Classic, and the only formal entrance into the group became the central stairways on the southern and northern faces of Structure A-1, which led up to a landing on the structure's summit. Once the apparent center of a small village during the Middle and Late Preclassic periods, by the Late Classic period, ca. 650–750 CE, the Upper Plaza likely served as a private compound for the ruling family.

Excavations in the Back Plaza, a courtyard attached to the southern base of the Upper Plaza's platform, determined the final versions of the low structures surrounding the courtyard and the courtyard surface itself date to the Late Classic period. Artifactual and contextual data suggest servants prepared meals and performed other support functions for the occupants of the Upper Plaza but lived elsewhere (Vazquez 2015). A radiocarbon sample from the ashy matrix of an apparent kitchen building returned a 2-sigma calibrated range of 673 to 863 CE, with a high likelihood (87.3%) that the sample falls within 673–779 cal CE (Vazquez 2015:Figure 6.43).

In other parts of the site, Late Classic construction events buried older features or resulted in entirely new architectural groups. As examples of the former, renovations to the hilltop complex known as Norman's Temple, 400 m west of the Upper Plaza (Booher 2016b), and to the Western Plaza (Harrison 2000), a palace group 250 m west of the Main Plaza, resulted in the final configurations of the two groups. Similarly, older Late Preclassic deposits were buried over by Courtyard D-1 during the Late Classic period. Investigations there documented multiple renovations to the two excavated structures during the Late Classic (Booher 2016a).

As the monumental core of the city expanded, construction of residential groups filled in some of the space around the epicenter in areas not previously occupied. This is best evidenced by work at Courtyard D-4, a residential group 550 m east of the Upper Plaza. Gertrude Kilgore and colleagues (2017) determined that the residents of the group constructed and modified their courtyard in the Late Classic period, without any earlier antecedent. Similarly, Richard Meadows and Kristen Hartnett's (2000:25) work at Group H, 1 km east-southeast of the Main Plaza, determined the lithic workshops and associated house mounds there all date to the Late Classic period.

Setting the Stage: Late Classic Site Planning at Chan Chich

The Late Classic construction program at Chan Chich formalized the final plan of the city and appears to have been well planned. Although notoriously difficult to detect archaeologically, evidence for planning comes from the coordination of buildings in the site core and the shared planning elements among cities in the region, following Michael Smith (2007). First, as Brett Houk (2015:Table 10.5) notes, 64% of the buildings at Chan Chich share a common orientation, suggesting a high degree of coordinated arrangements of buildings and spaces. Furthermore, the buildings in the site core are arranged in an orderly fashion, suggesting a high degree of formality, as defined by Smith (2007). Although its structures lack the construction volume of counterparts at Xunantunich, the site imparts a moderate degree of monumentality with its massive Main Plaza, imposing Structure A-1, and unusually wide causeways (Houk 2015).

The high degree of planning is most evident in the construction and integration of the two causeways into the city's plans. The two causeways enter the Main Plaza directly opposite each other and are both 40 m wide. Accommodating such wide causeways required the city's architects to reserve significant percentages—over 30% in the case of the Eastern Causeway—of the eastern and western edges of the plaza, leaving these wide gaps free of impinging structures. Although constructed late in the history of the site, the two causeways were not site-planning afterthoughts; rather, planners factored their size and location into the overall design of the plaza. Furthermore, their excessive widths and the fact they do not connect to large architectural groups suggest that transportation was not the primary function of the causeways. Each one terminates at a small mound, and Houk (2013) suggests that these termini structures served some function related to ritual use of the causeways (see below). The causeways represent significant labor investments and space allocation in the Late Classic site plan. Collectively, the architecture of the causeways—their excessive widths, their terminating at small shrines, their entering the Main Plaza directly in front of the most massive building at the site and the ball court—support the interpretation that the city's planners designed the causeways as processional routes rather than internal transportation features.

Other evidence for planning comes from standardization among cities (Smith 2007). As Smith (2007:25) suggests, the "presence of similar buildings, layouts, and other urban features in a series of related cities suggests adherence to a common plan or idea of city planning." Similarly, Houk

(2015:276–277) suggests architects borrowed planning ideas from nearby centers, allowing for specific design trends to spread in a region without necessarily being universally adopted. Therefore, the sources for planning ideas may be inferred through comparisons to other nearby sites.

In the case of Chan Chich, the Late Classic site plan shares standard design elements with neighbors to the north, south, and west. The site's massive plaza echoes a regional trend in the Three Rivers adaptive region that clearly favored the construction of one massive public plaza at what Garrison (2007:318) identified as territorial capitals. Houk (1996, 2003, 2015) notes that the sites sharing this planning concept have these massive plazas at the northern end of the civic-ceremonial core of the city. The Main Plaza at Chan Chich represents both a significant labor expenditure and a deliberate allocation of prime real estate for vacant horizontal space rather than monumental buildings. Thomas Garrison (2007:319) suggests the massive plazas seen in the Three Rivers region "are explicit statements of hierarchical control [capital cities had] over their hinterland populations during the Late Classic Period." Garrison (2007:320) proposes that rulers used the large plazas as "locales for the gathering of the entire hinterland population . . . to celebrate important public rituals which were not permitted outside of the capital." Recently, Barbara Stark and Wesley Stoner (2017:413) proposed that "some plazas may have been 'overdesigned'; that is, larger than any expected crowd in order to create an imposing spatial grandeur, perhaps symbolizing the importance of a center [or] establishing room for processions." The massive plazas at Chan Chich and other Three Rivers region centers may be examples of this type of design principle.

The radial causeways at Chan Chich appear to be part of another city planning idea shared with cities to the west and south, including La Honradez in northeast Petén and El Pilar and Xunantunich in the Belize River valley (Houk 2017:10). Chan Chich's elevated Eastern Causeway is unique among the radial causeways in the region, but its parapet-lined Western Causeway has counterparts at La Honradez, El Pilar, and Xunantunich.

Although Xunantunich has much larger structures than Chan Chich, most notably the massive El Castillo palace complex anchoring the southern end of Plaza A-I, the two sites resemble one another in other ways. In both cases, radial causeways enter the site core from the east and the west directly in front of the most massive structure. Rather than connecting the site centers to other groups of monumental architecture, the causeways at Xunantunich and Chan Chich terminate at individual structures or courtyards.

The two sites also have attached ball courts—an unusual form in which one of the ball court's buildings is physically attached to another larger structure. Regionally, attached ball courts are also found at La Honradez and the smaller center of Saturday Creek in the Belize River valley. At Chan Chich, the ball court's position, too, is an interesting planning choice. It sits on a level platform that joins the western end of the Eastern Causeway. This platform and the Main Plaza to the north would have provided space for crowds to watch a game played in the court, perhaps with the city's elite observing the action from above on the edge of the Upper Plaza (see Stark and Stoner 2017).

Elements of Chan Chich's Late Classic site plan appear coordinated and designed to function together as an architectural stage for public spectacles, particularly ones involving processions (Booher 2016a). Ashley Booher and Houk (2016) and Houk (2013, 2015) have previously suggested the Main Plaza, Structure A-1, the ball court, the two causeways, and the small structures at the ends of the causeways acted as "processional architecture" designed to function as stage and viewing area during spectacles, following closely the form and function of architecture at Xunantunich described above. In fact, a ritual/performance-based interpretation of these design elements explains many of the site-planning decisions embedded into the Late Classic monumental landscape of Chan Chich. For example, the need to elevate either performers or spectators, or both, depending on the type of ritual or performance, accounts for the width of Structure A-1's southern stairway, which rises 10 m up the face of the building (Houk 2015). At 15 m wide (Houk 1998:28), the stairway is more than 12 m wider than the central landing on Structure A-1's summit (see Herndon et al. 2014:56) and its counterpart leading down from the summit into the Upper Plaza.

Archaeological Evidence for Processions at Chan Chich

Booher's (2016a) thesis research tested the possibility that the causeways and related structures at Chan Chich functioned, at least in part, as stages for ritual processions. To accomplish this, excavations assessed the form and age of the two causeways, targeted Courtyard D-1—immediately adjacent to the Eastern Causeway—and tested Structures D-48 and C-17 at the ends of the Eastern and Western Causeway, respectively. Crews also excavated nine clearing units, which generally measured 2 by 2 m, along the causeways' margins to look for trash or other debris that might be related to the causeways' function(s), following Keller's (2006) approach at Xunantunich (Booher and Houk 2016).

In general, the clearing units and the units placed to examine causeway construction did not yield clear evidence of processions along the causeways, but our sample of approximately 62 m^2 of area along the edges of the two features represents approximately 1% of what we would conservatively consider the likely zone for debris to accumulate—4 m wide strips centered on the causeways' edges. One class of recovered artifacts, however, is potentially indicative of ritual activity along the causeways: obsidian blades. While the Maya used obsidian for quotidian activities, they also commonly used obsidian blades in bloodletting or other ritual activities (Aoyama 2014). Attesting to its ritual importance, obsidian is a common constituent of special deposits in the Three Rivers region, including a Late Classic cache of 17 complete blades on the summit of Structure A-1 at Chan Chich (Herndon et al. 2014:58), a Late Classic cache of over 160 blades beneath an altar at Dos Hombres (Houk 1996:185), and a layer of over 23,000 obsidian artifacts that capped an Early Classic tomb at Dos Hombres (Houk and Valdez 2011:154; Robichaux and Durst 1999).

Booher's (2016a) investigations only recovered five obsidian blades from the clearing units and architectural units, but all came from above the terminal phase architecture and are therefore potentially associated with activities performed on the causeways. If this sample represents the density of obsidian across the rest of the potential debris zone, then there are possibly over 400 obsidian blades in areas we did not test. Keller (2006:494) also encountered obsidian blades in generally low densities along the causeways at Xunantunich, noting that of the more than 50 clearing units she excavated along Sacbe I at Xunantunich, "only a handful encountered any obsidian artifacts whatsoever." However, a pair of units along the southern parapet of Sacbe I, 20 m east of the plaza, discovered 28 obsidian blades and one chert eccentric, and another pair of units on the northern parapet directly north of the first pair encountered an additional five blades (Keller 2006:493–495). Ruling out other formation processes, Keller (2006:496) suggests "that the blades were used . . . in association with ceremonies at the threshold between the road and plaza spaces."

Excavations revealed another locus of comparatively high obsidian density at Structure D-48 at the end of Chan Chich's Eastern Causeway. This small structure proved to be a 1.5 m high platform with a 20 cm high patio attached to its southern face. Excavation units on the platform, the patio, and along the patio's western base, covering 19 m^2, recovered 16 obsidian blades along with 57 non-obsidian stone tools, 16 ground stone artifacts,

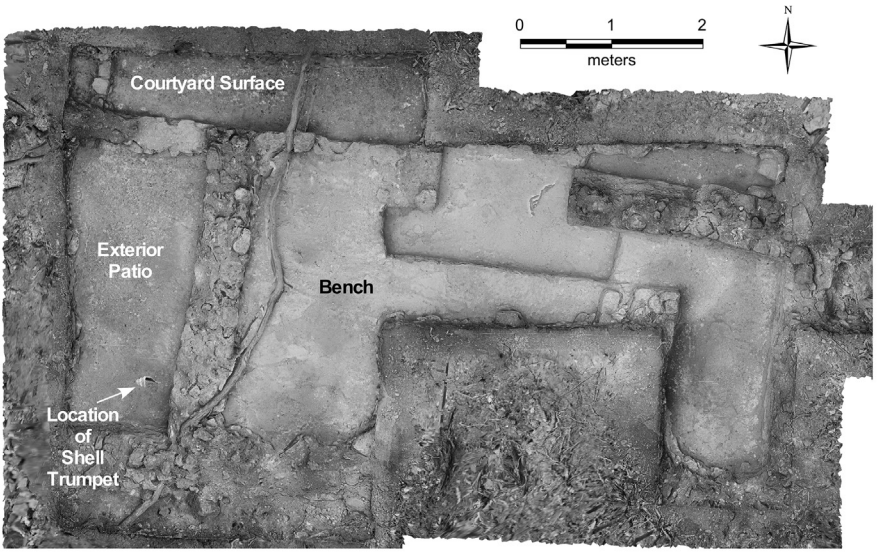


Figure 8.2. Orthomosaic of excavations at Structure D-3 (image created by Brett A. Houk).

and 1 piece of shell jewelry (Booher 2016a:Table 7.1). The 16 obsidian blades represent a density of 0.84 blades per m^2 of excavated area.

Due to the presence of three large trees on its summit, we could not investigate Structure C-17, the mound at the western end of the Western Causeway, as intensively as Structure D-48. A single 2 by 4 m unit, placed at the base of the mound, encountered the lowest step of the structure and recovered five obsidian blades from above the terminal phase architecture for a density of 0.625 blades per m^2 of excavated area (Booher et al. 2015).

While we commonly find obsidian in domestic contexts, it usually occurs in lower densities. For example, at Courtyard D-4, which is the most intensively studied residential courtyard at the site, extensive excavations of room interiors, exterior space, and midden-like deposits recovered 21 obsidian blades associated with the final Late–Terminal Classic period occupation of the group in approximately 126 m^2 of excavation area, for a density of only 0.16 blades per m^2. The higher densities of obsidian artifacts seen at the two termini structures suggest they represent "ritual refuse," like that described by Keller (2006:496) along Sacbe I at Xunantunich.

The most promising evidence for processions' taking place comes not from either causeway but from Courtyard D-1, a small group of three structures immediately north of the Eastern Causeway approximately 170 m east of the Main Plaza (Figure 8.2). Booher's (2016a) extensive excavations of

Plate 8.1. Shell trumpet, made from a West Indian Chank shell, in situ at Courtyard D-1, Chan Chich (photo by Brett A. Houk).

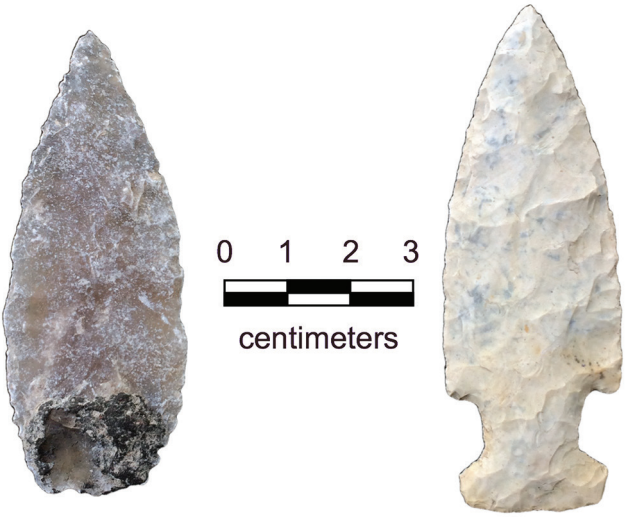


Plate 8.2. Spear points from Structure D-3, Chan Chich (after Booher et al. 2015:Figure 2.21). Note the asphaltum hafting residue on the left specimen (photo by Brett A. Houk).

two of the three structures recovered a partial ceramic drum, a shell trumpet (Plate 8.1), three shell tinklers, and two spear points (Plate 8.2), all of which could have been used in processions.

Other features of the structures in the courtyard suggest that it served some specialized function (Booher and Houk 2016), and its proximity to the Eastern Causeway suggests a functional relationship (Guderjan 1991). The largest building in the group, Structure D-1, occupies the western edge of the courtyard and faces east. The building's modest architecture comprised a mid-height masonry wall and perishable super structure, but was apparently embellished with a vaulted entrance, based on the volume of collapse debris, which included a large number of vault stones, between the two doorway jambs (Booher and Houk 2016:267). The ceramic drum sherds mentioned above were found at the base of a c-shaped bench immediately inside the entrance to the room.

A burial found within the bench is an additional data point suggesting a specialized function for the courtyard. Discovered in the southeastern corner of the bench, Burial CC-B14 contained the remarkably well-preserved remains of an adult female (Plate 8.3). She was interred in a seated position with her arms crossed over her chest. The few grave goods buried with her included a mold-made ceramic spindle whorl, a shell bead, and a piece of deer antler, which was found directly behind her skull, suggesting perhaps she was buried with some sort of headdress. Three of her teeth, including two incisors, had B4 modifications, following Javier Romero's (1970) scheme, and Karl Mayer (1983:18) has associated this form of filing with the glyph for "Ik." Mayer (1983:18) notes that "Ik" translates as "air, wind, breath, the life, the spirit, etc.," and "this association suggests that Ik-shaped upper central incisors were not only intended as a simple adornment, but also had a religious or esoteric significance."

We have previously suggested that the individual in Burial CC-B14 was a ritual specialist based on her dental modifications and associated grave goods (Booher and Houk 2016), but here we propose that the location of her grave and the position of her body are further indications of either her elite status or some specialized occupation. As Carolyn Freiwald and colleagues (2014:98, 100) observe, seated burials account for fewer than 2% of individuals in Classic period contexts from a sample of 27 sites and nearly 1,600 individuals. Patricia McAnany and colleagues (1999:142) conclude that seated burials, at least during the Preclassic period, are related to positions of authority, and Freiwald and colleagues (2014:105) propose that

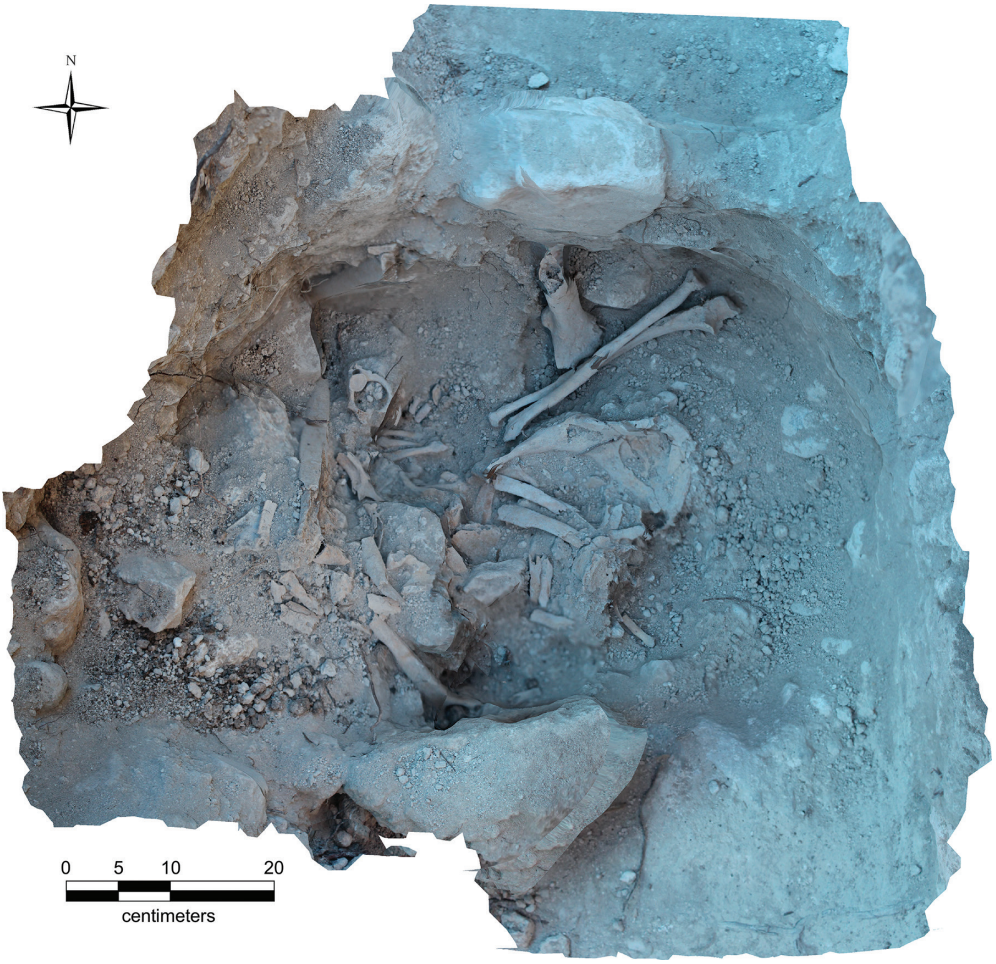


Plate 8.3. Orthomosaic of Burial CC-B-14 during excavations at Chan Chich (after Booher et al. 2015:Figure 2.14) (image created by Brett A. Houk).

these uncommon burials "represent special and possibly individualized phenomena."

With its proximity to the Eastern Causeway, evidence for costumes and musical instruments, unusual architecture, and the burial of a possible ritual specialist, we propose that Courtyard D-1 may have served as a locale for preparations related to processions. Perhaps musicians, dancers, or some type of religious specialists used it as a staging area during the Late Classic period.

Discussion and Conclusions

The Late Classic monumental landscape at Chan Chich represents both careful planning and substantial expenditures of labor and resources. While plazas, causeways, and structures served multiple functions, we suggest that many planning and engineering decisions addressed the need for the site center to serve as a stage for processions and spectacles. Echoing Keller's (2006:612) lament that the artifacts potentially indicative of processions and spectacles are "frustratingly few in number," the comparatively high densities of obsidian blades from the termini structures and causeway clearing units support our contention that the two causeways functioned in part as stages for ceremonial processions and performances. This conclusion is bolstered by data from Courtyard D-1, which is less than 5 m from the Eastern Causeway and arguably functionally related. There, artifactual, architectural, and burial data combine to suggest the group served a specialized, ritual function during the Late Classic, perhaps as a staging area for performers.

The site-planning analysis presented above, when combined with Classic period depictions of processions and spectacles, provides additional evidence that creating a massive stage for ritual and performance guided many planning decisions at Chan Chich in the Late Classic period. As Inomata (2006a:818) has previously suggested, "securing sufficient spaces for public events was a primary concern in the design of Maya cities," and the integrated causeways and termini structures, the massive Main Plaza, the ball court, and Structure A-1—likely a stage and grandstand at various times—reflect this concern. The rulers at Chan Chich were not alone in making planning decisions of this sort. As previously discussed, Xunantunich follows the same planning model, and Houk (2015:280) has identified likely "processional architecture" at La Milpa, Dos Hombres, El Pilar, and Minanha. Each of these cities has idiosyncratic design elements that can be explained in the context of political theater and public performance.

Large-scale public spectacles and ritual performances created "moments of 'real' communities" (Inomata 2006a:818), and the built environment of Maya cities—the arrangement of the monumental spaces and structures—created inviting places and enhanced the attraction and attachment nonelite members of a polity felt to the city and its rulers (Hutson 2016:201). Creating this sense of community and attachment may have been the ultimate unstated intent of all this planning, construction, and theatricality. As small kingdoms proliferated across the lowlands in the Classic

period, competition for resources, labor, power, and prestige accelerated. Competition could manifest itself in many ways, from outright violence to ostentatious architectural displays like Caana at Caracol or El Castillo at Xunantunich (see Sharer and Traxler 2006:495). Hosting and staging spectacles, which attracted the potentially independent and fragmented rural population, may have been another manifestation of Late Classic elite competition, and "theatrical events . . . may have served as centripetal forces that counteracted centrifugal tendencies of Maya polities" (Inomata 2006b:206). At Chan Chich—and at many of its neighbors—the political need for the ruler to integrate the community and compete with his peers guided the planning and construction decisions in the Late Classic period and transformed the monumental landscape into a vast and coordinated stage for political theater.

Acknowledgments

The authors would like to thank John Morris and the staff of the Institute of Archaeology in Belize for permitting our research. We would also like to thank Alphawood Foundation Chicago for funding the excavations at Chan Chich since 2016 and Kristen Hettich for all her assistance and support in administering our grant. We are grateful for suggestions from an anonymous reviewer that strengthened this chapter. Finally, the Bowen family, Alan Jeal, and the staff of Chan Chich Lodge have hosted the project since 2012 and facilitated our work with kindness, good food, and cold Belikin beer.

9

La Corona

Negotiating a Landscape of Power

MARCELLO A. CANUTO AND TOMÁS BARRIENTOS Q.

The Classic Maya center of La Corona is located within one of the least archaeologically known areas of the Maya Lowlands: northwestern Petén (Figure 9.1). Yet the data recovered from the La Corona region importantly contribute to our understanding of the geopolitical landscape of the Classic Lowland Maya. Specifically, La Corona's abundant hieroglyphic texts provide faithful testimony of the development not only of the local power relations but also, and importantly, of a landscape of hegemonic relationships emanating from the north and penetrating the southern Maya Lowlands throughout the Classic period.

When viewed through traditional models of Lowland Maya political organization (see Chapter 1, this volume), La Corona presents several contradictions to the definitions of "capital" or "secondary center," as established by both epigraphic and archaeological data. In this chapter, we suggest that the relationship between the ancient polities of Sak Nikte' (La Corona) and Kaanul (Dzibanche and Calakmul) was more than just a political alliance. In fact, we see their complex interaction as profoundly impacting the power structure, social organization, and sacred history of La Corona. These changes help us to reconstruct the principles of Kaanul kingdom's hegemony that led to the development of a monumental political landscape.

Conceiving Kaanul as a Hegemonic Polity

The case of Kaanul suggests we should avoid seeking a single definition for a "Classic Maya polity" and should appreciate the importance and function of secondary centers in the formation of larger political landscapes.

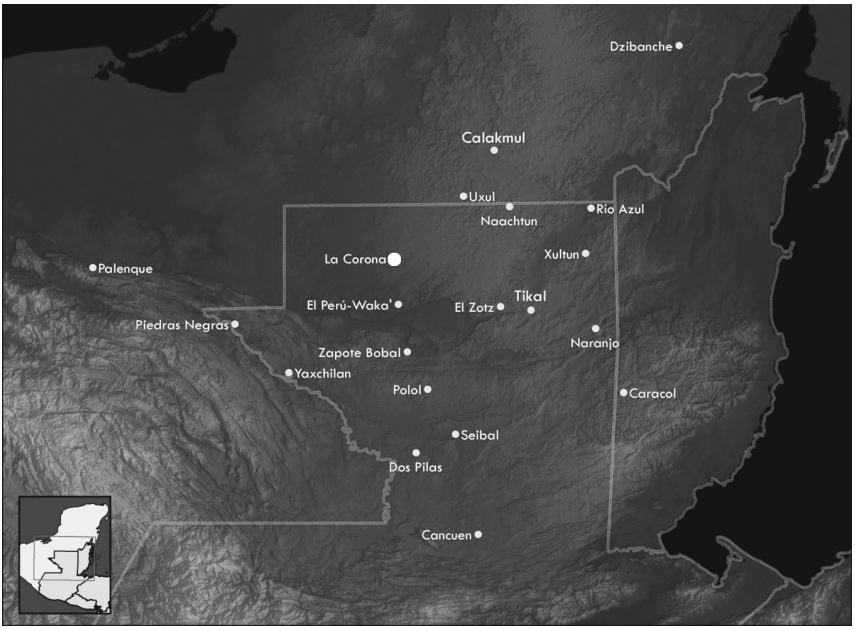


Figure 9.1. Map of the Maya Lowlands (map by Marcello A. Canuto).

In this way, scholarship should focus on individual cases and their historically contingent complexities (Foias 2013:2) and investigate how they were composed and functioned; that is, we should focus on governance rather than formal definitions. "Hegemonic governance" included the development of multiple and geographically extensive political relationships that were the basis for regional domination. If we consider these relationships as manifestations of a process, then we must recognize that the ways in which the Lowland Maya built these complex systems were historically particular and not necessarily formally comparable to one another. Consequently, we must ask the historically specific questions: what kind of hegemony did the Kaanul kingdom develop, and what were the modes and channels of its strategic control?

To model the Kaanul hegemony, we must bring the armory of universal political forms into play without typecasting it as a Western imperium. Comparative studies of such systems throughout the ancient world (e.g., Morris and Scheidel 2009) recognize that the creation of political landscapes "not only articulates the production and application of relations of authority, but also the promotion of a lasting perception of geopolitical

relations" (A. Smith 2003:135–136). That is, the most effective method to achieve lasting perceptions is through the establishment of secondary or satellite centers loaded with the physical administration of the corresponding landscape. In the case of the Kaanul hegemony, its political landscape had a direct effect on the physical landscape as the influence on these centers through "royal roads" incremented the size and distribution of populations and their local resources. Thus, we need to investigate to what extent Kaanul integrated a range of different sociopolitical formations and subsequently developed a more homogeneous set of political values and ideological identities. In this way, the impact of the Kaanul can be assessed vis-à-vis the notion of "state centrism" (Goldstone and Haldon 2009:21).

When elucidating the nature of hegemony, we note that every ancient empire permitted, incorporated, and even depended on some degree of infrastructural autonomy at local levels. As such, hegemonic states are reconfigurations of preexisting relations based in traditional management systems of local resources (such as, among others, labor, raw material, finished goods, or strategic places). The persistence of local systems of management, therefore, might not be a good proxy for political autonomy given their lasting utility in hegemonies. Hegemonic states are thus better understood as a constellation of autonomous administrative nodes maintaining mutually beneficial hierarchical relations with a singular "central" state. Kaanul, as all hegemonies, was therefore not the result of innovative political structures completely developed *ex nihil*. Rather, Kaanul expanded by making use of preexisting structural systems, like subsistence strategies, calendric systems, lineage and kin rights and privileges, socioeconomic communities, religious beliefs and practices, and political institutions—which remained salient in its mosaic of asymmetrical relations.

Consequently, modeling the hegemonic landscape of Kaanul must begin with its strategies for indirect management, mechanisms of coercion, tactics of assimilation, and intrusion upon local and regional economies. This approach will help determine the local and regional impact of their hierarchical relations. That is, how was political power exercised and how did it impact the internal dynamics of subordinates? To study these processes, it is tempting to rely solely on historical texts; however, it is important to define if they correlate with material evidence, especially the architectural development and the presence of imported goods found in offerings and funerary contexts. To achieve that granular comparison, La Corona represents a perfect case study.

La Corona

La Corona, originally named Sak Nikte', was discovered by the scientific community in the late 1990s (Canuto et al. 2005; Chase and Chase 1998b:21; Graham 1997a, 2002; Hansen 1997; Stuart 2001). However, for decades, its existence had been known to scholars as the enigmatic "Site Q," whose location remained unknown even though it was famed for its many looted monuments of extraordinary quality (Coe 1973; Freidel and Guenter 2003; Graham 1988, 1997a, 2002; Houston and Stuart 2001; Jones and Spetzler 1992; Martin 2001; Mathews 1988; Mayer 1978, 1980, 1984, 1987, 1989, 1991, 1995; Miller 1974; Ringle 1985; Schele and Grube 1994; Schele and Mathews 1991; Stuart 2001; Stuart and Houston 1994).

La Corona is located in the western edge of the central karstic uplands of the Maya Biosphere Reserve. It is nestled within a chain of rain-fed fresh water basins (known as *civales*) on the western edge of the river-less upland region of the central lowlands (Figure 9.2). To the west lies a periodically flooded area with vast savannahs and transition forests. Not surprisingly, this area had sparse settlement in the Classic period (Leal Rodas and López Aguilar 1993; Leal Rodas et al. 1988). To the east of La Corona, the terrain rises steadily in the direction of the central uplands, where sites like Tikal, Uaxactun, and El Mirador are located. Finally, a few kilometers to the southwest of La Corona, the Xan and Chokop Rivers drain into the larger, south-flowing San Juan River, which in turn flows into the westerly drainage of the San Pedro Mártir River, providing access to the lower Usumacinta and the Gulf of Mexico. Although La Corona is relatively isolated with few nearby monumental sites, its natural landscape provided easy access to the major riverine routes connecting the central Maya Lowlands with the Gulf Coast.

La Corona's core measures only ca. 1 km^2 (Plate 9.1) with a relatively low and dispersed population (ca. 3,500–5,000 people in the Late Classic). It contains three architectural "complexes" interspersed with several other pyramidal groups and extended household groups (Canuto and Barrientos Q. 2009; Canuto et al. 2005, 2006; Plate 9.2). The Main Group, built on an elevation between two civales, consists of a large 10,000 m^2 plaster-floor plaza. This plaza contains most of the site's surface monuments and is surrounded by two range structures and two pyramidal temples. The palace (Str. 13Q-4) lies on the western side of the Main Group; it consists of an 8 m high platform supporting several patios and buildings for different functions. Roughly 600 m to the east of the Main Group is the Coronitas Group,

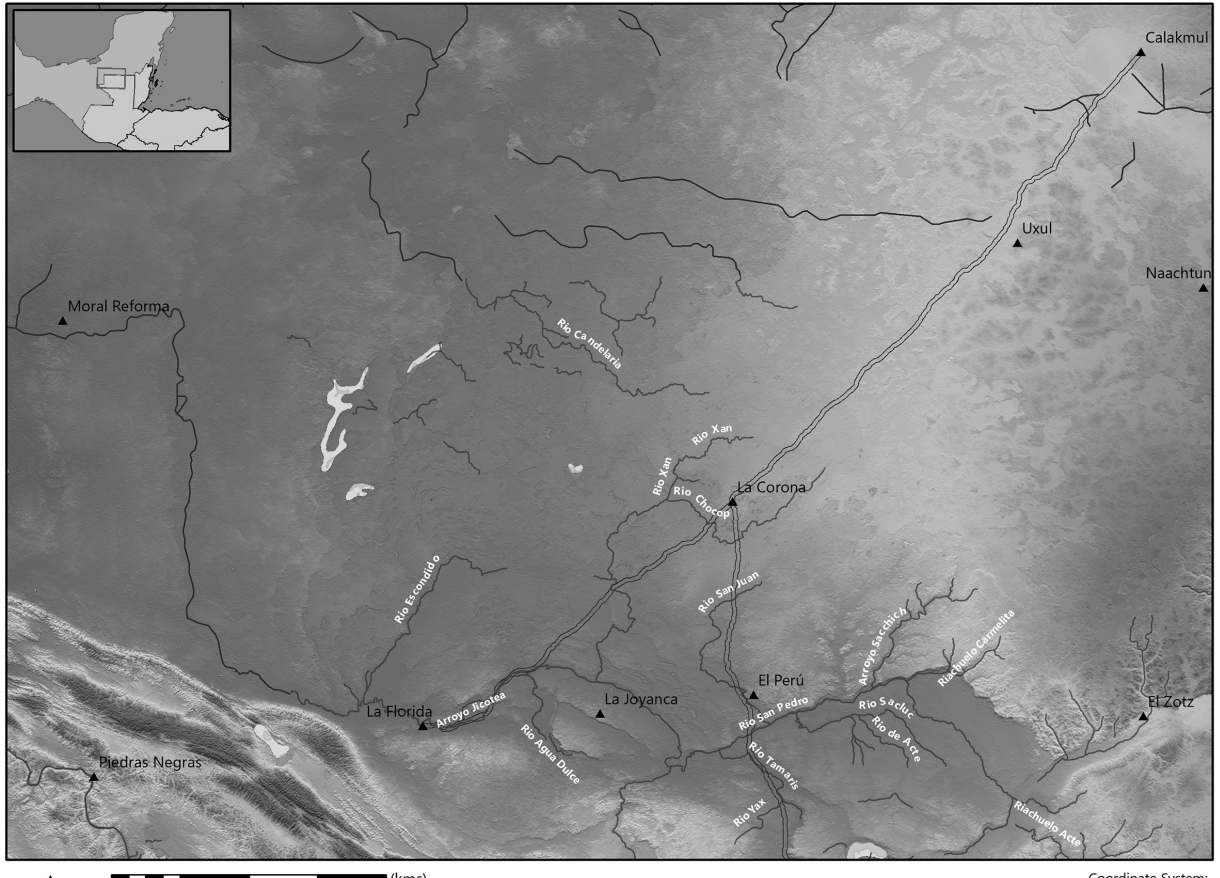


Figure 9.2. La Corona and the Central Maya Lowlands (map by Marcello A. Canuto).

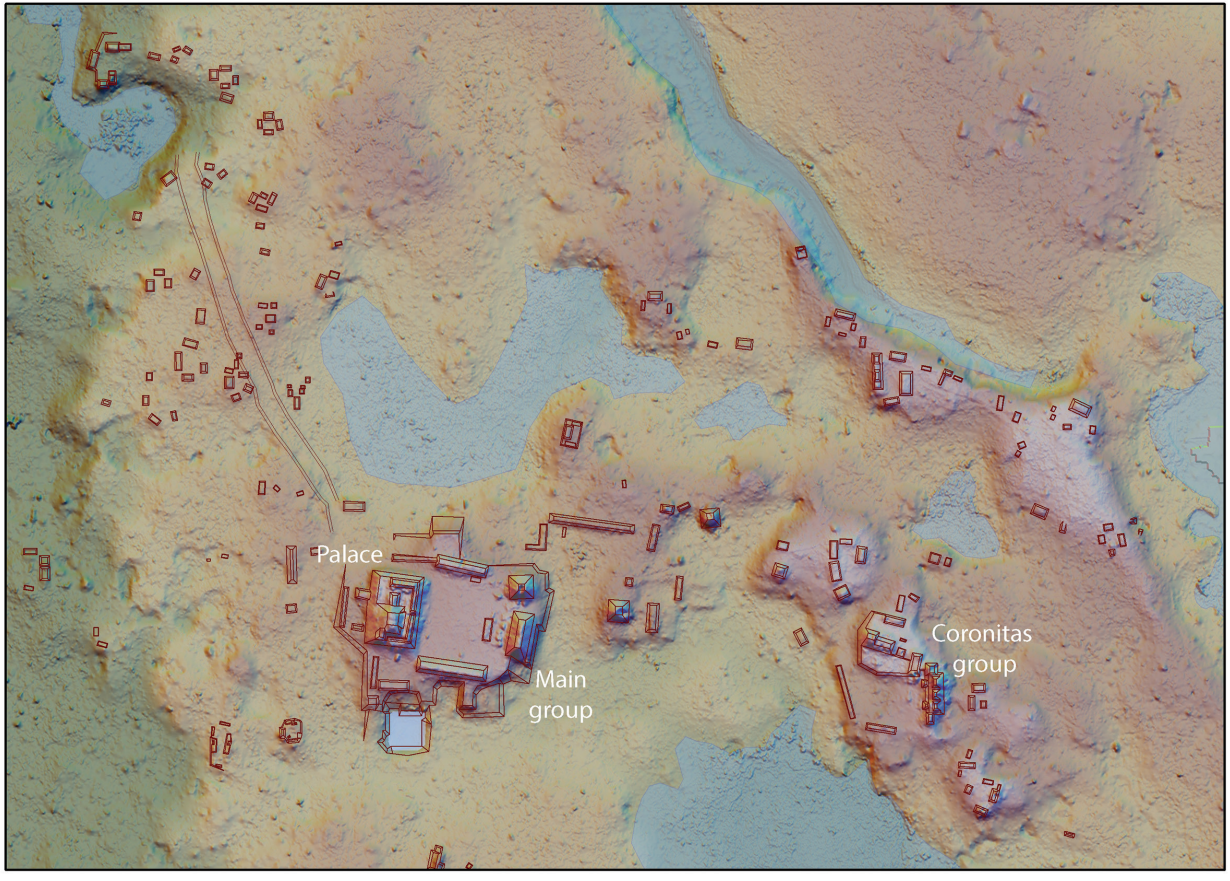


Plate 9.1. Map of La Corona (map by Marcello A. Canuto).

Plate 9.2. La Corona reconstruction (courtesy of PACUNAM).

which is dominated on the east by a linear arrangement of five temples facing west. It also contains five structures on a large platform to the northwest that face south (Figure 9.3).

Despite its relative isolation and diminutive size, its copious monuments record that, starting in 520 CE, Kaanul became an important and political presence at La Corona for over two centuries. It remains unclear how this political alliance was initially forged. The neutral tone of La Corona's epigraphic record on this matter does not provide a glimpse into whether this relationship was imposed, cajoled, or mutually accepted. Nevertheless, it is clear from Dzibanche's inscriptions that Kaanul was already in a process of expansion, conquering other kingdoms. In any case, at La Corona, this political relationship instigated profound changes that far exceed what can be explained by models suggesting that the Maya political landscape was populated by independent city-states. What follows is a discussion of how governance was conducted at La Corona during the Kaanul era.

Titles, Visits, and Coercion

None of the discovered texts from La Corona use the title construction known as the "emblem glyph" to refer to its rulers (Canuto and Barrientos Q. 2011). La Corona rulers were considered *ajaw*—"lord"—a noble title seen across the Maya Lowlands, but never as either *k'uhul ajaw* ("divine lords") or *sak nikte' ajaw* ("lord of La Corona"), and much less *k'uhul sak nikte' ajaw* ("divine lord of La Corona"). Given the numerous hieroglyphically inscribed monuments from La Corona, this absence appears deliberate and systematic.

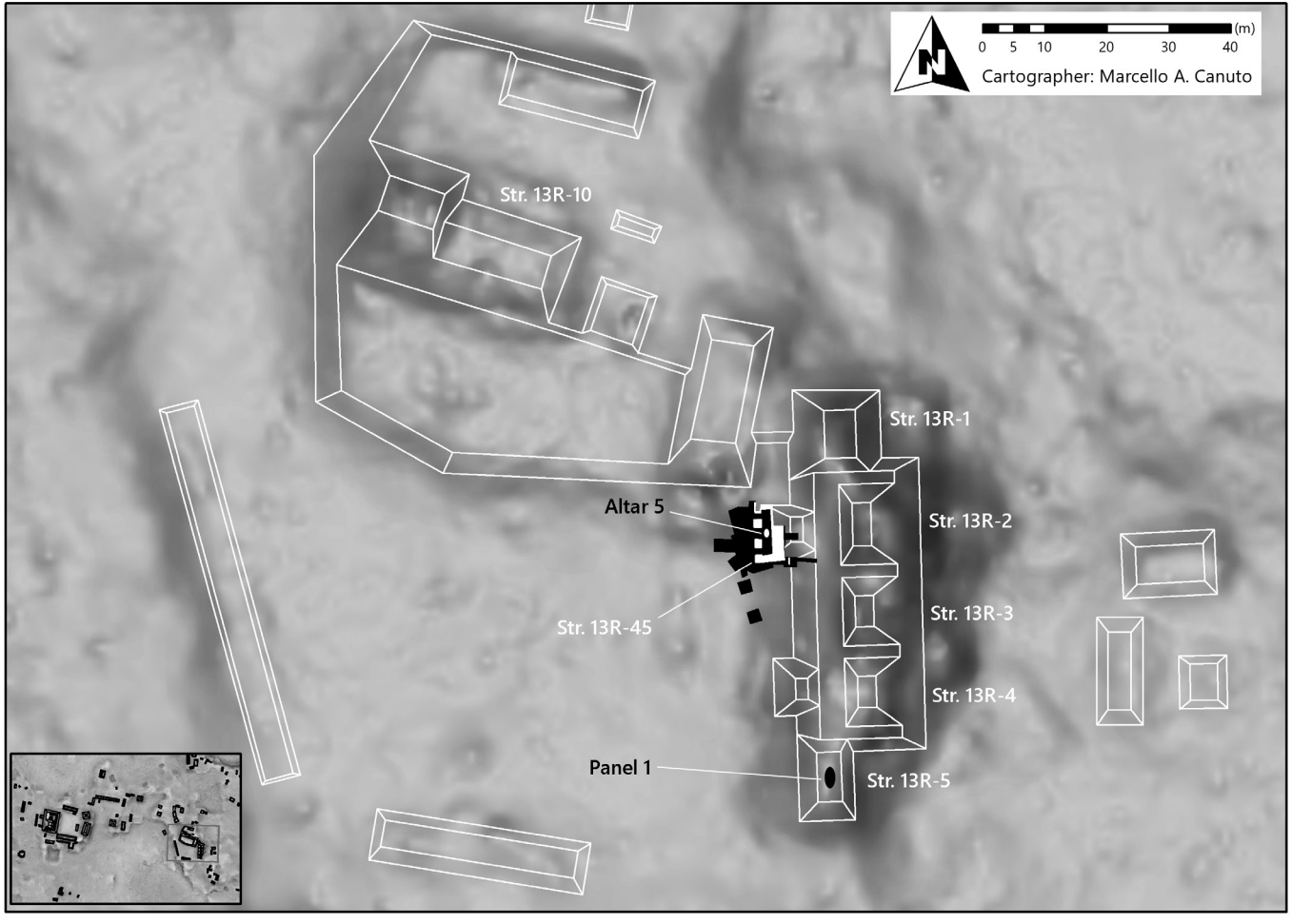
This absence rendered the royal titles that its rulers did use singular to their political regime. In fact, the Kaanul-era La Corona rulers referred to themselves with an altogether different title: s*ak wahyis*. This title, roughly glossed as "white soul," was associated with individuals located in the region controlled by Calakmul long before it became the seat of the Kaanul kingdom (Boot 2005; García Barrios 2011; García Barrios and Velásquez Garcia 2016; Grube 2013). Therefore, it could represent an ethnonym denoting a noble group, family, or lineage anciently associated with Calakmul. Membership within this group or ethnicity or noble class was also subject to hierarchical distinctions. For instance, there are several cases in which a La Corona ruler was given the title *k'uhul sak wahyis* (e.g., Hieroglyphic Staircase 2, Block 2; Stuart 2012a; Stuart and Baron 2013:192–193). Nevertheless, although La Corona's rulers enjoyed distinct titles of elevated status, the absence of the fundamental political title *k'uhul sak nikte' ajaw*

that would have communicated "a particular person is the divine lord of La Corona" is salient.

The absence of emblem glyphs and the use of *sak wahyis* at La Corona are not unique in the region. Once the Kaanul dynasty established itself at Calakmul, the Kaanul ("snake-head") emblem glyph replaced the Calakmul's own (native) emblem glyph characterized by a bat head (Martin 2005). As the hegemony of the Kaanul dynasty extended beyond Calakmul throughout the Late Classic period, the absence of local emblem glyphs became characteristic of several of its nearby vassal centers, such as Uxul (Grube 2005) and Oxpemul. Consistently, several of Calakmul's subordinates also used the *sak wahyis* title. Therefore, the La Corona rulers were similar to other *sak wahyis* titleholders within the Kaanul kingdom. They belonged to a group that was distributed well beyond the local limits of La Corona.

The relationship between the Kaanul and La Corona kings was intense and intimate. There were relatively frequent visits of Kaanul kings to La Corona during their alliance, but two are of special importance: that of Yuknoom Ch'een in 635 CE (Stuart et al. 2014) and Yuknoom Yich'aak K'ahk' in 696 CE (Stuart 2012b). The first, in 635 CE, relates to the seminal event of this period, the intradynastic Kaanul conflict that resulted in a shift of power from Dzibanche to Calakmul. One year before Yuknoom Ch'een was inaugurated as Kaanul ruler, he visited La Corona to play the ballgame with La Corona's ruler, Sak Maas. It has been long recognized that Kaanul kings used the ballgame to forge and seal alliances (Canuto and Barrientos Q. 2013; Grube and Delvendahl 2014; Helmke et al. 2015; Lee and Gámez 2007); therefore, this event appears to feature the same intent. Importantly, however, this alliance was secured just before intradynastic conflict erupted within Kaanul, resulting in the accession of Yuknoom Ch'een and the death of Kaanul ruler Waxaklajun Ubaah Kaan one year later (Helmke and Awe 2016a). Yuknoom Ch'een's visit to La Corona was likely anticipating these major events. While the exact role of La Corona is still unknown, the sequence of events strongly suggests that Yuknoom Ch'een wanted to secure allies for his hegemony.

The second important visit was conducted by Yuknoom Yich'aak K'ahk' on February 2, 696 (Stuart 2012b), only a few months after he lost a battle to Tikal's Jasaw Chan K'awiil on August 3, 695. During his visit, he played the ballgame, likely reaffirming his relationship over his La Corona vassal lord, Chak Ak' Paat Kuy, in the wake of Kaanul's first major military defeat. The text also referred to the Kaanul dynast with the unique title of "13 k'atun


0 5 10 20 30 40 (m)
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Str. 13R-10
Str. 13R-1
Altar 5
Str. 13R-2
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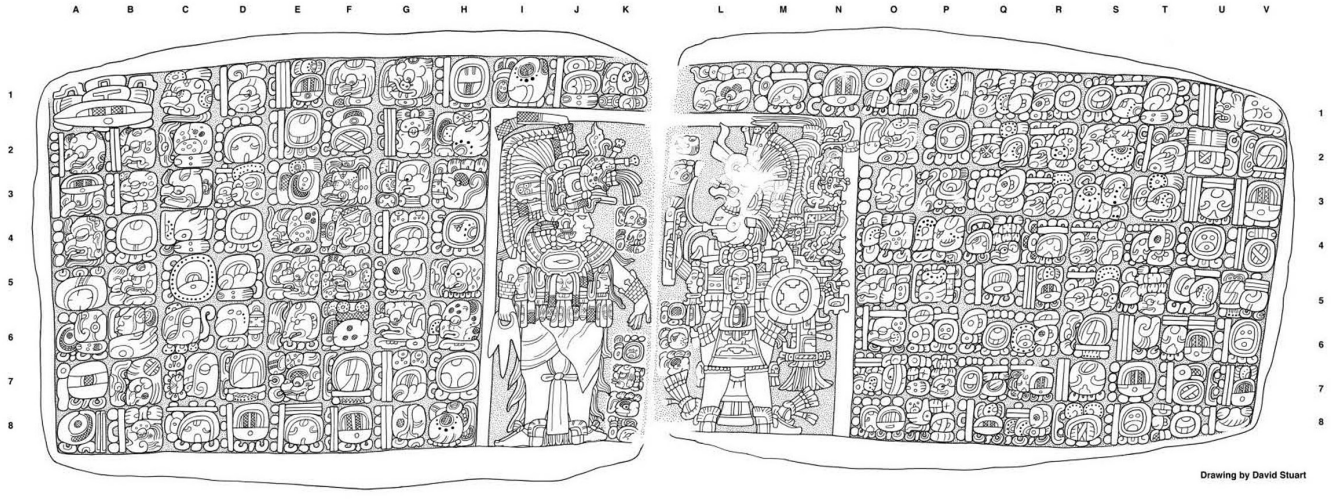
Str. 13R-4
Panel 1
Str. 13R-5



Panel 1

Altar 5

Figure 9.3. Map of Coronitas Group (map by Marcello A. Canuto), Altar 5 (photo by Ruben Morales), and Panel 1 (drawing by David Stuart).

lord," and a reference to the end of the thirteenth Baktun, emphasizing his temporal domination: "even in inglorious defeat, *Yuknoom Yich'aak K'ahk'* was still the 'King of Time'" (Stuart 2012b). It seems likely that this vainglorious text was commissioned for and exhibited at La Corona to mark his superiority lest doubts should arise among his subordinates.

Alternatively, La Corona rulers made visits to the Kaanul court consistent with the asymmetry implied by the visits of the Kaanul kings to La Corona. They traveled to Calakmul for two main reasons: (1) to stay as youths and become part of the Kaanul court; or (2) to undergo some form of investiture that rendered them legitimate rulers. In the case of the former, K'inich [?] Yook and his younger brother Chak Ak' Paat Kuy were living in Calakmul when the reigns of their respective predecessors ended (Martin 2001; Schele and Grube 1994; Schele and Mathews 1991). Since the Kaanul lords hosted the successors of the La Corona throne, they were able to integrate and educate them into their hegemony, provide them a suitable Kaanul princess bride, and maintain leverage over their subordinate parents.

The other kind of visit involved shorter trips to Calakmul to undergo a specific ritual of investiture. Two such visits were recorded in uncommon detail in both Panel 1 (Stuart et al. 2014) and Element 56 (Stuart et al. 2015) for K'inich [?] Yook and Chak Ak' Paat Kuy, respectively (Figure 9.4). In both these cases, they traveled to Calakmul to receive special garments and ornaments that identified them as properly vested Kaanul vassals. K'inich [?] Yook first took the throne in 667 CE after his father's unexpected death; in that case he was referred to only as the "son of the *sak wahyis*" (Stuart et al. 2014:439). Eight years later, in 673 CE, he traveled to Calakmul to participate in a ritual with the Kaanul king where he received a new costume of rulership. David Stuart and colleagues (2014:439) note that in 675 CE, he acceded to the throne as *ajaw* (*joyaj ti ajawil*). In fact, on Panel 1, he is portrayed dressed as a *sak wahyis* (like his father) on one side and as a warrior on the other (see Figure 9.3).

Overall, the evidence of unique titles, alliance-consolidating visits by the hegemon, protracted stays in the capital by the subordinate's heirs, and investiture rituals conducted in the kingdom's capital all suggest an asymmetrical relationship that included a healthy dose of coercion, even if no explicit evidence of a military incursion at La Corona has been recovered to date. So strong was this control of Kaanul over its vassals at La Corona that they never had the freedom of presenting themselves as "typical" kings of a Classic Maya city. During the Kaanul era, the La Corona rulers used the

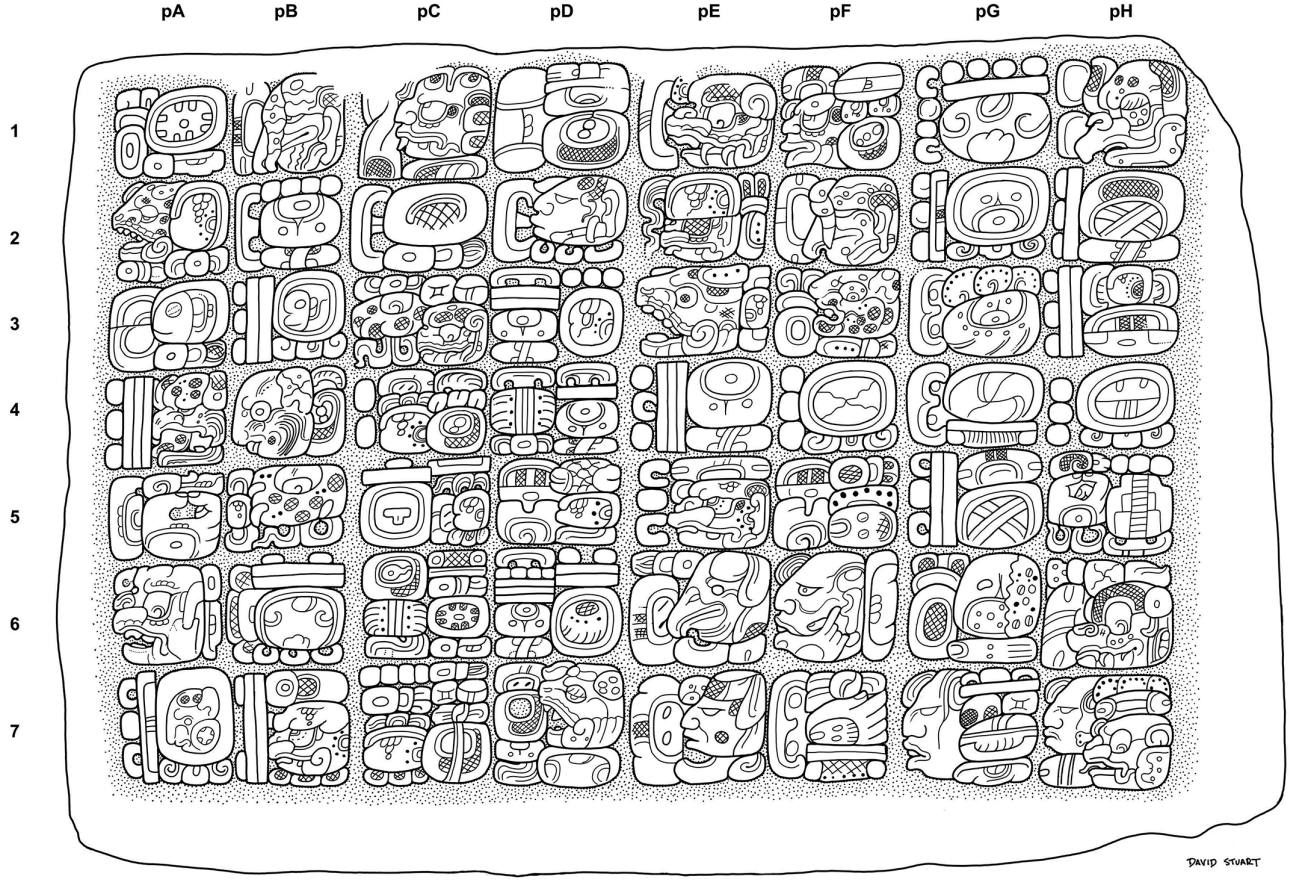


Figure 9.4. Element 56 (drawing by David Stuart).

sak wahyis title as means to identify with a noble class that was subordinate within Kaanul's political sphere. Moreover, La Corona kings acceded to the throne as *sak wahyis* and could rise to the level of *k'uhul sak wahyis*. However, they needed special investiture at Calakmul to become *ajaw* and never achieved the status of *k'uhul ajaw*.

Beginning in 520 CE, the Kaanul-backed La Corona rulers claimed a *sak wahyis* affiliation that connoted membership into a larger group from the northern Petén, perhaps located at Calakmul before the city became Kaanul's capital. It is possible then that La Corona's Kaanul-era rulers were a branch of the *sak wahyis* group from the Calakmul area who garnered favor from the Kaanul kings by discharging their duties in a strategic sector of the expanding Kaanul kingdom. Considering the evidence of the expansion of the Kaanul dynasty throughout the central Maya Lowlands (e.g., Grube 2004; Martin and Beliaev 2017; Velásquez Garcia 2005), military victories and other types of coercion clearly played a central role in their hegemony. While this type of power may not have been expressed explicitly in the case of La Corona, it would have undoubtedly permeated, implicit and understood, all the interactions between the Kaanul rulers and their La Corona vassals. In this sense, we can interpret the La Corona *sak wahyis* as local proxies for a more regional coercive authority, the Kaanul kings. This proxy relationship of coercion, furthermore, seems to be implied in the text of recently discovered Altar 5 of La Corona (discussed further below; Stuart et al. 2018).

Hypogamy, Kinship, and Lineage

As noted above, La Corona's political trajectory changed drastically in 520 CE when a Kaanul princess from Dzibanche married its local ruler, "Vulture" (the first; Martin 2008). This first Kaanul woman represented the inauguration of a long Kaanul-dominated chapter in La Corona's history. She would be the first of three royal Kaanul princesses at La Corona (the first in 520 CE, the second in 679 CE, and the last in 721 CE), each marrying the ruler of La Corona (Martin 2008). Consequently, the Kaanul dynasty maintained multigenerational kin-based ties with La Corona rulers for nearly 250 years. Importantly, the arrival of these princesses was recorded with the verb "*huli*" on Panel 6 and Block 9 of Hieroglyphic Staircase 2 (Element 37; Figure 9.5). This verb, used to describe, for instance, the 378 CE *entrada* of Sihyaj K'ahk' into the Maya Lowlands or the arrival of K'inich Yax K'uk' Mo' to his new kingdom of Copan, often heralds a transformative event, such

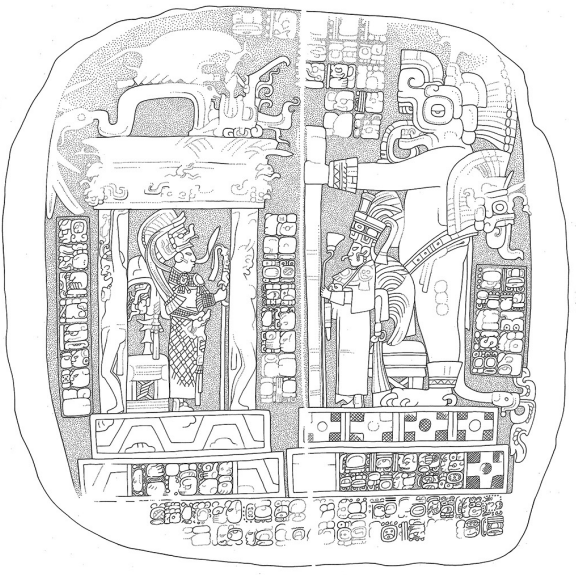


Figure 9.5. Panel 6 (photo by Marcello A. Canuto; drawing by David Stuart) and Hieroglyphic Staircase 2, Block 9 (photo by David Stuart).

as a dynastic founding (Stuart 2000). Clearly, then, the texts at La Corona suggest that these arrivals are politically transformative.

Since the La Corona kings were not considered "divine lords," their marriages to Kaanul princesses are examples of hypogamy—a system whereby elite women "marry down." In predominantly patrilineal societies, such as that of the Classic Maya (Sharer 1993), hypogamy instigates instability in social structure (Levi-Strauss 1969:240–241). From the perspective

of the man, a hypogamous system provides opportunities for (political) advancement and social promotion through his "in-laws" (affines) rather than his own kinfolk (cognates). Therefore, since the Kaanul women acted as conduits for the political advancement of their husbands, they would have received singular attention in La Corona's official historical record.

The consistent practice of hypogamous marriage alliances during the Kaanul era might explain the unexpectedly high number of monuments at La Corona. In material terms, a hypogamous alliance involves positing the dowry of the higher-status woman against some form of "bride service" by the lower-status man (Goody and Tambiah 1973). Since, in Classic Maya society, control over the labor of artists, scribes, and craftsmen constituted "wealth," a Kaanul princess's dowry could have included the services of such artists. Thus, the repeated integration of Kaanul princesses and their dowries into La Corona could have provided its kings privileged access to artists that would otherwise have been impossible for a typical vassal lord. These princesses would also likely have been accompanied by a whole host of other royal attendants, such as ladies' servants, guards, craftsmen, and ritual specialists that would have further populated the La Corona court, rendering it more sophisticated and thereby expanding the local ruler's access to a royal lifestyle.

One clear example of this type of marriage-induced favor is a dismantled hieroglyphic staircase referred to as "Set A." Two dozen panels from this hieroglyphic stairway have been recovered thus far (Stuart and Baron 2013). All were removed from their original location and reinstalled in no particular order elsewhere—mostly in Str. 13R-10 (Ponce 2013; Ponce and Cajas 2013). Several of its elements were subsequently looted in the 1960s and sold in the antiquities market. Because the "Set A" hieroglyphic staircase was dismantled, dispersed, reconfigured, and then partially disturbed and looted, it remains incomplete and jumbled and therefore difficult to interpret. However, the recovered blocks provide enough snippets of its narrative to suggest that it was commissioned to commemorate the birth of Jalib, the son of K'inich [?] Yook and his Kaanul wife. In so doing, it also records the accomplishments of the La Corona kings and their association with the Kaanul dynasty, including a reference to the 679 CE arrival of K'inich [?] Yook's Kaanul bride (see Figure 9.5). Overall, by providing the La Corona ruler the opportunity to record the extensive history of his family (it is the longest known hieroglyphic text from Guatemala), he also memorialized the multigenerational asymmetrical entanglement of the two royal families.

Reciprocally, the lower-status La Corona king owed bride service. Certainly, allegiance to his wife's patriline, that of the Kaanul king, would have fulfilled the bargain. In fact, La Corona texts record many examples of its rulers aiding Kaanul in its endeavors. Within La Corona, further, marriage events might have been signaled by feasting and even dedications of new buildings (Stuart et al. 2008). There is some evidence, for instance, that construction of a new building (or building complex) was begun a few months before K'inich [?] Yook's marriage (Boot 2011), perhaps to commemorate the continued alliance between these two families.

Within La Corona's palace, however, research has shown that the Kaanul era did not witness unique architectural expansion. In fact, notable architectural investments were also made before and after La Corona's Kaanul era (Canuto and Barrientos Q. 2018). Although few construction projects were undertaken in the palace during the 250-year span of Kaanul influence, the palace's overall spatial plan, forms of access, and interior visibility did change notably both at the beginning of and end of this period. Shortly after the arrival of the first Kaanul woman, a large platform, named Halcón (ca. 550 CE), canceled an important pre-Kaanul closed patio group with residential and administrative characteristics (Bustamante 2014). It supported a new set of buildings, like Str. 13Q-4E, rising roughly 11 m above the Main Plaza floor (Simova et al. 2018). Around Str. 13Q-4E, large multiroomed structures (Str.s 13Q-40-sub1 and 13Q-4P) were later added to the west and south (Bustamante 2015, 2016). Structure 13Q-40-sub1 was a long, multiroomed structure with interior walls covered in geometric designs painted red, orange, black, and perhaps even blue (Bustamante 2015, 2016). Str. 13Q-4P was composed of two vaulted rooms, each with large lavish benches and orange-painted floors with red-painted trim (Bustamante 2017). A set of plain hard limestone panels and several oval-shaped clay tablets suggest scribal and artistic activities for these two rooms.

During the last decades of the Kaanul era (ca. 700 CE), the northern half of the palace was dominated by Str. 13Q-4G in the north and Str. 13Q-4F to the west (Lamoureux-St-Hilaire and Bustamante 2016), forming an open patio. This patio was composed of residential, administrative, and storage spaces where some craft production and feasting occurred (Plate 9.3). Str. 13Q-4G consisted of a large substructure platform with a south-facing staircase leading into the courtyard. The building itself was a long and open building with stucco frieze decorations on its cornice. Given its location and layout, this building probably served both administrative as well as storage functions (Lamoureux-St-Hilaire 2018:307). Finally, Str. 13Q-4F

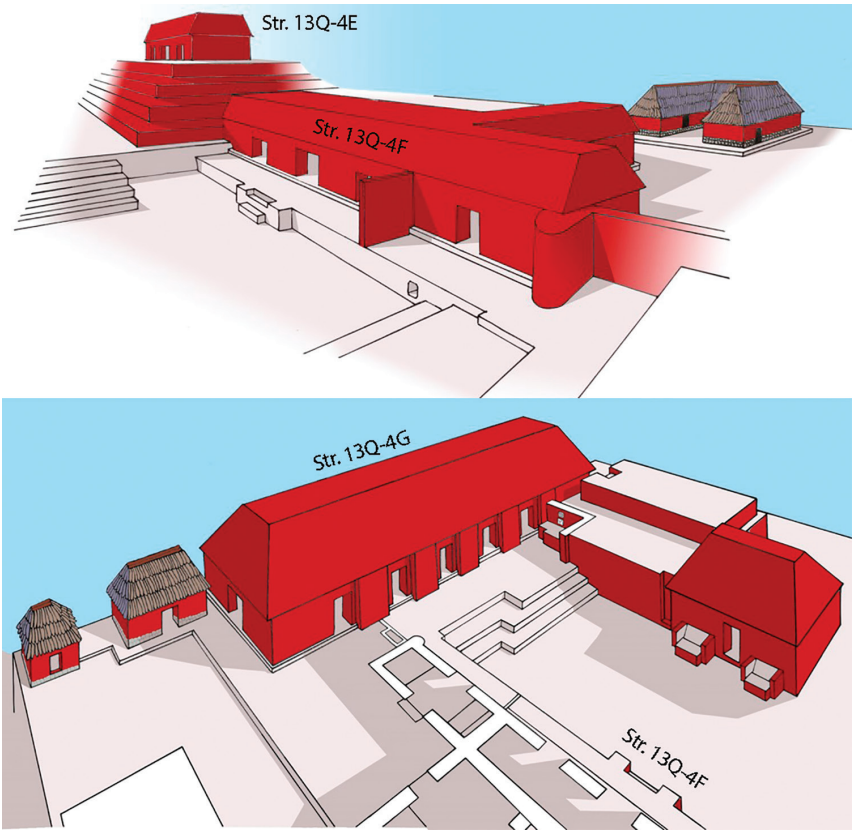


Plate 9.3. North Palace (drawing by Maxime Lamoureux-St-Hilaire).

was likely the residence for an important member of the La Corona court discharging record-keeping duties (Lamoureux-St-Hilaire 2018:307), consisting of two rooms, one with a central bench (Lamoureux-St-Hilaire and Bustamante 2016). Furthermore, recent chemical residue analysis of the palace (Lamoureux-St-Hilaire et al. 2019) also suggests that in the eighth century CE, the royal residence increasingly became a locus for storage and craft production consisting of several special-function buildings as well as activity areas.

Thus, while specific rooms from the Kaanul era reflect a sophistication, decoration, and artistry unlike other buildings in the La Corona palace, the evidence suggests that architectural investment for the majority of this period was limited. In fact, it seems plausible to suggest that the arrival of Kaanul to La Corona in the mid-sixth century CE did not result in the

monumental expansion of its palace; rather, it resulted in a relatively major change in its spatial plan to allow for a more complex and specialized set of administrative, storage, and production activities. Moreover, the style, quality, and monumentality of this architectural complex was never superlative, especially compared to other contemporaneous Lowland Maya palace compounds.

In general, the Kaanul-era Halcón phase (550–750 CE) palace buildings (1) represent the best examples of architecture throughout the site, (2) include ornate modeled stucco friezes, (3) have spacious and luxurious interiors, and (4) contain objects of high quality and exotic materials (Canuto et al. 2017:190). The quality, privacy, and scale of this architecture suggest that it could have been the temporary residence of Kaanul visitors, such as artists, merchants, soldiers, emissaries, and family. In fact, the palace may not even have been continuously occupied by its local rulers during this period. Since as youths La Corona rulers lived in the Kaanul court, it is possible that they and their Kaanul spouses shuttled between La Corona and Calakmul. Interestingly, Block 5 of Hieroglyphic Staircase 2 (Element 33) records the arrival of Kaanul's king, Yuknoom Yich'aak K'ahk', to La Corona accompanied by La Corona's own king, Chak Ak' Paat Kuy (Stuart 2012b). This passage implies that the La Corona palace had been absent of its king for some time before this event.

Both the reconfiguration of La Corona's Kaanul-era palace and the repeated accompaniment or visitation of Kaanul rulers by their La Corona vassals suggests that their "bride service" was integral to their political identity. The structured expectations of reciprocity with hypogamy in a patrilineal system provided the La Corona rulers access to wealth and status markers. Through kin-based mechanisms, wealth and prestige were transferred to La Corona's Kaanul-era rulers; the price was allegiance.

Modifications to the role and function of La Corona during the Kaanul-era are directly correlated to a significant change in the way political authority was legitimated. Given the close relationship and frequent visits between the two, either as sons-in-law or grandchildren of the Kaanul lord, La Corona rulers were controlled using a traditional source of legitimate authority: kinship. Therefore, beyond establishing coercive authority, the Kaanul-backed La Corona kings manipulated traditional systems of kinship-based authority to gain wealth and status. However, this status was conditioned on their compliance to a political system of regional scope.

Patron Gods, Feasts, and Charisma

One major challenge to these forms of authority was their nonlocal origin. From 520 CE onward, coercion and traditional kin-based authority were intimately tied up with entities outside of La Corona. Ancestral lineage and the privilege afforded to the original community would have been strong undercurrents challenging the power of La Corona's Kaanul-backed rulers. As a result, a third strategy was implemented that rewrote local history, undermined antecedent privilege, and sanctioned local rulers by conferring onto them powers unique to them; that is, they claimed certain nontransferable "charismatic" power. By charismatic, we mean a religious and moral authority, where the persona of ruler functioned as an interlocutor, medium, or broker between the populace and the supernatural world.

Two in-situ hieroglyphic monuments located in the Coronitas Group, Panel 1 and Altar 5, provide important information about the nature of Kaanul-sponsored kingship at La Corona (see Figure 9.4). Once contextualized with architecture and artifactual data, these texts and associated iconography, the hegemon's influence on this vassal becomes clear. These two monuments record (1) the arrival in 314 CE from an unknown origin of dynastic founder Tahn K'inich to La Corona's location (Stuart et al. 2014); (2) the arrival of a La Corona patron deity to the same place four millennia earlier in 3805 BCE (Guenter 2005:16); (3) the conjuring of La Corona's patron deities in 544 CE (Canuto and Barrientos Q. 2018; Stuart et al. 2018); (4) the (re)dedication of shrines for three of La Corona's patron deities in 658 CE; and (5) the construction of a shrine for a fourth patron deity in 677 CE (Guenter 2005:17).

The rhetoric of these monuments characterizes seminal actions of statecraft undertaken by the Kaanul-backed La Corona kings. Panel 1 references the founding of La Corona's settlement in 314 CE by Tahn K'inich—two centuries prior to Kaanul's intervention at La Corona (Canuto et al. 2012:318; Stuart et al. 2014:436). Significantly, this event is described with the prosaic term "*tali*" (*tal-iiy*)—"coming from somewhere else," perhaps a place named *laju[n]a['] ("ten-waters" place). The text avoids using the more meaningful term "*huli*" ("to arrive") that is reserved for important people implicated in dynastic change (Baron 2016a:150–151; Stuart 2000). The earliest refuse deposits thus far recovered at the site date to 300–350 CE, consistent with the 314 CE founding date (Canuto and Barrientos Q. 2018). Therefore, this foundation text confers no special importance to the arrival of La Corona's first settler and establishes that the patron gods

preceded him by millennia, thus establishing the primacy of these deities over the historical founder.

Given this rhetorical juxtaposition, the governance of La Corona depended heavily on subsequent royal events related to these patron deities. Initially, Joanne Baron (2013:346; 2016a:160) interpreted the conjuring and reverence of the four patron deities of Panel 1 by La Corona kings in 658 CE and 677 CE as acts of political renewal in the wake of internal political strife. However, the recently discovered Altar 5 demonstrates that at least two of these patron deities were conjured over a century earlier (544 CE) by a previous La Corona ruler, Wak Chan Chak Took Ich'aak (Canuto and Barrientos Q. 2018; Stuart et al. 2018). It now appears more likely that these patron deities were introduced to La Corona when it first became a Kaanul vassal as early as 520 CE; as such, they are fundamental to the installation of the new Kaanul-backed regime at La Corona.

The newly empowered Kaanul-backed La Corona rulers undertook a program of political renovation and legitimation by conjuring and then associating themselves with gods whom they claimed long-preceded the original settlers of the community. The carved scene of Altar 5 shows how the Kaanul-era rulers charismatically associated themselves with these mythical entities who claimed primacy, and therefore legitimate authority, over any and all historically established lineages of the La Corona settlement and presumably any of their pre-Kaanul rulers (Baron 2016a:Chap. 5). That is, these patron deities were rendered rhetorically legitimate through claims of historical priority over the La Corona community and any of its leaders. In this way, Kaanul-era statecraft at La Corona manipulated traditional principles of authority to invent a new political community.

The material record associated with these two monuments provides further evidence for this strategy. Both monuments were discovered in the Coronitas Group. Panel 1 was located within Str. 13R-5, the southernmost structure of the five-temple alignment (Canuto et al. 2005); Altar 5 was discovered embedded in a floor of Str. 13R-45, a small temple located in front of Str. 13R-2 (Canuto and Barrientos Q. 2018; Stuart et al. 2018).

A careful analysis of stratigraphy and osteological radiocarbon dates from burials in Structure 13R-5 and the other temples and structures of the Coronitas Group (Baron 2013:273–284, Appendix C; Baron 2016a:128–137, 151; Canuto 2006; Canuto et al. 2012:318–319; Canuto et al. 2015:57–58; Ponce 2014:109–117; 2015:231–233, 249–256) indicate that Panel 1 was not located in Str. 13R-5 originally. Thus, it is impossible to assert that this structure was originally a patron deity temple. Since radiocarbon dates and

ceramic evidence from other Coronitas Group burials (Burials 2 and 6) date to the beginning of the Kaanul era, it seems most likely that Coronitas Group functioned initially as a necropolis for the Kaanul-era kings of La Corona.

It is also possible that Altar 5 was installed elsewhere before being moved to Str. 13R-45. Excavations of this building only recovered seventh century CE ceramics, suggesting it was constructed nearly a century after the monument was carved. Moreover, analysis of the monument's carved surface revealed that the ruler's face was mutilated, indicating that it was subjected to some radical event after its dedication. It is possible, therefore, that in the mid-seventh century CE, Str. 13R-45 was built to house a mutilated Altar 5. If so, the event recorded in Panel 1 involving Chakaw Nahb Chan dedicating shrines to the three patron deity gods in 658 CE could be referring to some revitalization event involving Altar 5 and Str. 13R-45. We can thus conclude that both monuments were not in their original locations; they were remounted in these structures after originally being installed elsewhere at La Corona.

Throughout the five-temple group, excavations also recovered evidence of extensive feasting and ritual activities. Baron (2016a:157–158) found Early Classic middens in the back of the five-temple complex that indicated consumption of solid foods, as evidenced by a high number of plates. Ceramics from later midden deposits associated with these five temples suggest that, in the Late Classic, rituals primarily involved consumption of liquids. Furthermore, materials recovered in front of these temples also primarily involved liquid-storage vessels. Since Str. 13R-45 not only was constructed at the foot of the five-temple funerary complex in the middle of the seventh century CE but also housed an altar celebrating the conjuring of La Corona's "new" patron deities, it is likely that the later middens located in front of the five-temple funerary complex reflect patron deity venerations conducted in front of and in the shadow of Kaanul-era funerary temples. Baron (2016a) suggests that these liquid-centered activities were consistent with patron–deity celebration.

It is important to note that elsewhere in the Coronitas Group, ample evidence of ceremonial activity has been recovered. In fact, excavations of buildings flanking both the patron deity temple of Str. 13R-45 and the five-temple funerary complex further buttress the notion that La Corona's Kaanul-era rulers were using charismatic strategies to lay claim to traditional sources of authority. A cache in the final construction phase of Str. 13R-9 contained a stingray spine, four lightly used obsidian blades, coral,

shell, and a polychrome vessel decorated with the image of the lord of succession, divinity, and power, K'awiil (Gómez 2010:179–185). This cache suggested that rituals involving bloodletting were conducted by La Corona rulers in this part of the site. Moreover, 10 dedicatory offerings were cached in consecutive floorings of the adjacent Structure 13R-10 (Ponce 2014, 2015), suggesting that successive dedicatory rituals (of unknown purpose) were conducted in near proximity of both the funerary and patron deity temples of this architectural group.

Furthermore, as if to underscore the symbolic importance of this entire architectural complex, refuse throughout the Coronitas Group indicates several events involving large crowds. That is, the Coronitas Group was covered in refuse from multiple feasting events that date to both the end of the Late Classic (750–800 CE) and the Terminal Classic (800–900 CE) (Cagnato 2015:154–233; Fernandez 2011; Fridberg 2015:41–73; Fridberg and Cagnato 2013; Parris 2014; Perla Barrera 2013), even when the Kaanul influence was no longer present at La Corona. These appear to reflect massive consumption events involving all members of the La Corona community consuming a variety of foods including deer, turtle, bird, fish, and mollusks as well as maize, chili, amaranth, legumes, and leafy greens.

In conclusion, the combination of hieroglyphic texts, the five-temple funerary complex, the burials dating to the Kaanul era, the newly recovered patron deity temple, the religious nature of the caches, and the feasting evidence combine to suggest that the La Corona rulers of the "Kaanul Age" claimed some sort of authority based on their charismatic appeal as religious and moral figures. Their claim that La Corona was a "place" of local and religious (rather than regional and strategic) importance conferred them the ideologically advantaged function of interlocutor, medium, or broker between the populace and the tutelary gods—a role that both Altar 5 and the Str. 13R-9 cache indicate. By constructing a complex of spaces, buildings, and texts, La Corona's Kaanul-backed rulers claimed and celebrated a moral connection to ancient (but invented) entities to undermine the (traditional) authority of the community members and their leaders who historically preceded them.

Lowland Maya Geopolitical Landscape: 550–750 CE

La Corona's Kaanul-era rulers negotiated their authority with foreign, hegemonic, and coercive forces. An intrusive and transformative Kaanul dynasty compelled the development of a new political regime at La Corona.

The La Corona kings navigated this hierarchical landscape of power such in order to their advantage for over two centuries. First, their alliance to the Kaanul hegemony allowed them to channel the coercive force of the regional hegemon. Second, their hypogamous relationship with the Kaanul dynasty empowered them to draw on traditional kin-based privileges of reciprocity to claim local authority. Thus, the La Corona rulers claimed legitimate authority within Kaanul's landscape of power by channeling coercion and commuting kinship privilege.

Locally, however, they also adopted charismatic strategies to declare their interlocution between their subjects and "new" ancient patron gods. At La Corona the canons of legitimate political authority were manipulated in the way that the governance and sense of place were affected, and a new form of political landscape emerged. The concept of ancestral lineage, the privilege of historic precedence, and the sense of a local place were replaced by religious abstractions, a foreign power, and an emphasis on and exclusive kin-based prestige exchange. Thus, Kaanul compelled and enabled strategies that transformed how rulers were honored, what history was commemorated, and how the material world constituted power. These changes in the political culture of La Corona vassal were profound, perhaps even constitutional.

While it is unlikely that Kaanul replicated this type of intrusion with more distant vassals such as El Perú-Waka', Dos Pilas, or Cancuen, these changes demonstrate Kaanul's hegemonic strategy and impact. Kaanul likely managed both an "immediate" as well as a "distant" political landscape. As a hegemony, the Kaanul dynasty used diverse strategies to expand. For its "immediate" kingdom, which included La Corona, it transformed the nature of authority to realize its control.

As Maya studies focus on those past entities materialized almost exclusively by and for political action, models will attend more to the many ways rulers "synchronize practices that perpetuate the existing political order within a discursive framework that generates the allegiance of subjects" (A. Smith 2003:108). In this frame of reference, Kaanul-era La Corona underwent broad alterations to its political constitution and form of local governance in a way consistent with the actions of a hegemon. In this regional political landscape, the hegemon modified its vassals through intrusion and assimilation as well as through strategies of indirect management and coercive control of its subordinates. Kaanul integrated a range of different sociopolitical formations and developed a more homogeneous set of political identities by tasking its secondary centers with the physical

administration of their political landscape. This conclusion profoundly challenges the notion that the Lowland Maya political landscape was constituted by interacting city-states. Rather, it imagines a landscape enmeshed by asymmetrical relationships structured by a regional political order to which many Classic period centers belonged.

Acknowledgments

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10

Ancient Maya Queenship

Generations of Crafting State Politics and Alliance Building from Kaanul to Waka'

OLIVIA C. NAVARRO-FARR, KEITH EPPICH, DAVID A. FREIDEL, AND GRISELDA PÉREZ ROBLES

Ancient Maya history recounts the contest between the hegemons of Tikal and Calakmul, the Kaanul kingdom. In their respective clashes, they struggled to control trade and wealth and to demonstrate control over cosmic forces, the legitimacy of their ancestors, and the veracity of their own definitions of royal rule. Evident from these patchwork narratives is the role of royal women, named as both daughters of Kaanul kings and as queens throughout Petén (Martin 2008; Martin and Grube 2008). The actions and lives of these women formed a key component of Kaanul's brand of statecraft (Baron 2016b; Freidel 2014; Freidel and Guenter 2003; Looper and Polyukhovych 2016; Marcus 1972, 1976; Martin and Grube 2008; Reese-Taylor et al. 2009; Teufel 2008). The actions of Kaanul women constituted a unique strategy that provided an effective means of political integration. At Waka', recent research reveals striking textual and archaeological evidence of their influence, much of which is reflected in the creation and manipulation of monumental sculpture and architecture through time. This includes an extensive post-royal period during which fractured images featuring royal insignia were reassembled and reutilized in efforts to reverentially observe and muster elements of this successful legacy. In fact, ancient Wakeños built their core monumental landscape as a physical expression of Kaanul's ties to Waka' for generations. We underscore that those ties would not have been possible without generations of Kaanul women. Moreover, the archaeological and epigraphic records convey examples of Wakeños' continued reverence for these powerful women and the realm

from whence they came. Therefore, to frame any discussion about Kaanul without emphasizing the key role of female dynasts limits our best possible understanding of how these ancient Maya northerners consolidated power.

Waka' and the Kaanul Hegemony

Today Waka' is located in the heart of the Laguna del Tigre National Park, in the Maya Biosphere Reserve (Figure 10.1; see also Figure 1.1) in the northwestern part of the Department of Petén. In the late 1960s, Ian Graham (1988) first documented the remains of its complex political history. Forty years later, the Proyecto Arqueológico Waka' follows his work. Two central historical narratives undergird this research, an Early Classic one involving Teotihuacan and a Late Classic one with Calakmul and the Kaanul polity.

Archaeologically, we know more about the Late Classic narrative. However, these distinct histories are intertwined; Late Classic rulers acted while informed by a deeply rooted understanding of the events of the Early Classic. The Early Classic monuments hold a history that involves the heavily debated events of the Teotihuacan *entrada* of the fourth and fifth centuries. Sihyaj K'ahk', translated by David Stuart (2000) as "Fire-is-born," arrived at Waka' on January 7, 387 (Guenter 2014). He was fêted, and, importantly, he presided over ritual events at a Wite Naah, a fire shrine (Freidel et al. 2007). Then, eight days later, he presided over a heavily debated change of rulership at Tikal and the construction of the "New Order" hegemony of Maya cities (Estrada-Belli et al. 2009; Grube and Martin 2001; Martin and Grube 2008; Schele and Freidel 1990; Stuart 2014; see also Braswell 2003).

Waka's Late Classic narrative centers on the city's affiliation with Kaanul, cemented through the marriage of Waka' ruler K'inich B'ahlam II to a princess of Kaanul who bore the title Ix Kaloomte' K'abel, recorded on El Perú Stela 34. The Kaloomte' title is rarely afforded to women (the prefix "Ix" is a female designation) and, in Waka's thus known recorded history, it is only associated with one other figure, Kaloomte' Sihyaj K'ahk'. The alliance of Ix Kaloomte' K'abel and K'inich B'ahlam II marked a golden age for Waka' and Kaanul.

To understand Kaanul's interest in Waka', one must consider its geopolitical characteristics. Waka' is a citadel city sitting high atop an escarpment varying from 100 to 164 m above sea level (Escobedo and Freidel 2004) that overlooks a strategic choke point on a riverine transport route leading to the central karstic uplands of the Mirador plateau. Based on recent lidar data, the site's urban core is approximately 1.34 km^2, with the ceremonial

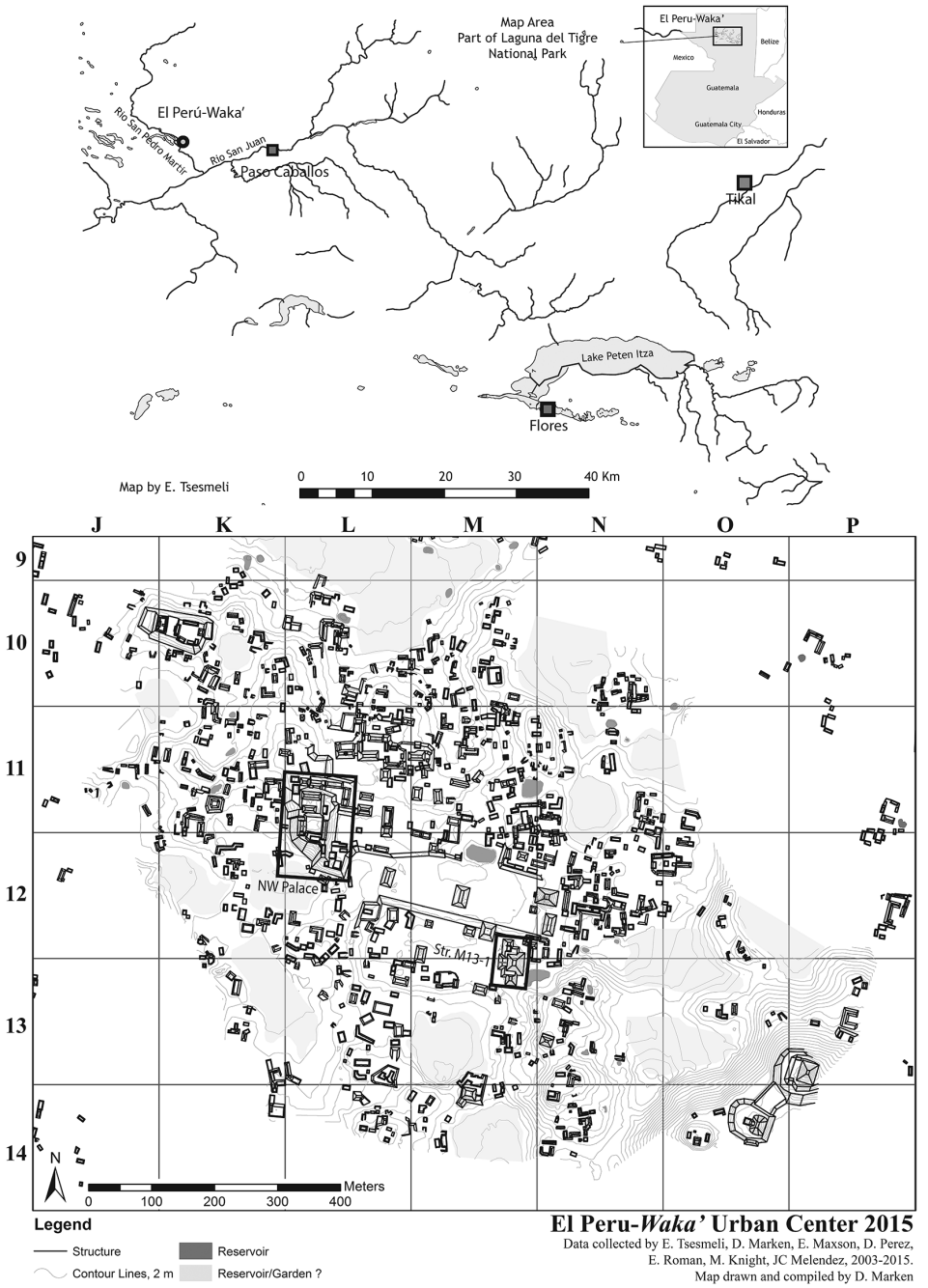

Figure 10.1. Map of northwestern Petén (*top*) with Waka' site map (*below*) highlighting locations of the Northwest Palace, Structure M13-1, and the Chok Group (images by E. Tsesmeli, courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala).

center along a roughly east–west axis (Marken and Pérez 2018). Waka's urban core is, to date, one of the most densely nucleated in northwestern Petén (Marken 2015; Marken and Pérez 2018).

The site's occupation history includes some 13 centuries spanning from the Preclassic, ca. 300 BCE, through the Terminal Classic, ca. 1000 CE (Eppich 2011; Eppich et al. 2005). Terminal Classic Waka' experienced a time of continued settlement. This contrasts with other southern lowland sites that saw their populations decline steadily in this period. Rather, at Waka' we see robust populations and significant political transformations that we are just beginning to understand. Another distinction of Waka's lengthy occupation is that its inhabitants did not engage in regicide at the failure of institutional kingship at the city in the early ninth century, as has been noted elsewhere (see Iannone et al. 2016). The institution of Classic kingship failed, but we see reverential manipulation of carved portraits and their installation into the city temple ritually revisited for generations following the decline of kingship. This work and the associated transition of governing authority may have been overseen by a lineage of religious authorities residing at the Chok Group (Eppich 2011).

Ancient Wakeños built their city adjacent to the confluence of the San Juan and San Pedro Mártir Rivers, which flow from the eastern karstic uplands of the Mirador region westward toward the Usumacinta. The city is strategically positioned where this riverine network intersects with a proposed north–south trade artery referred to as the "Great Western Route" (Demarest and Fahsen 2002; Woodfill and Andrieu 2012). This proposed trade artery would have connected the Maya Highlands to the northern lowlands as a major commercial route of the Maya world employing both overland (through the Western Highlands) and riverine (via the Pasion–Usumacinta riverine network [see Arnauld 1990; Demarest et al. 2008; Woodfill and Andrieu 2012]) pathways and figured prominently in the western Petén regional economy. Given Waka's prominence on the landscape and its proximity to this network, it was in an ideal position of dominance within this critical economic landscape. As such, there could be no greater argument for keeping Waka' loyal to Kaanul. Kaanul's regents made it their goal to ensure that the cities and towns along this route were loyal to them. A critical strategy employed to ensure political loyalty was marriage alliances, pairing royal women from Calakmul with local kings in key locations (see Canuto and Barrientos, Chapter 9 this volume). In tandem with the conquest of Naranjo and marriage alliance with Caracol (Helmke and Awe 2016b), both to the east, Kaanul rulers could implement their strategy

of marriage alliance at a regional scale to control the region both politically and economically, spreading their influence and enveloping their rival, Tikal. This strategy positioned women like K'abel as not only a wife and consort but as a political actor establishing a key connection between Waka' and Kaanul by embracing her new city while representing the interests of the dynasts to which she was most loyal. The Kaanul hegemony sought support in three ways: commercially (we presume largely via control of trade in jade, obsidian, and other items moving along the western route), militarily, and politically. Of these, our focus is on the power and personality of the royal women whose hypogamous marriage alliances translated into key political support for Kaanul (see also Canuto and Barrientos, this volume).

Recent research not only provides key insights into their diplomatic importance but also demonstrates that Ix Kaloomte' K'abel was one of multiple generations of Snake queens who cemented an enduring political relationship between Waka' and Kaanul. In fact, we know of three Waka' Snake queens of Kaanul pedigree. They are, in chronological order, Queen Ikoom, Ix Kaloomte' K'abel, and a wife of King B'ahlam Tz'am whose name has been lost. A final queen named Pakal is associated with the Bat emblem glyph, which may affiliate her with Calakmul, though not necessarily Kaanul (Martin 2005; see also Canuto and Barrientos, this volume). We have discovered tombs with evidence linking the interred with two of these four historical figures. These are Burial 8 from the Northwest Palace Acropolis (Lee 2005, 2012), likely corresponding to Queen Ikoom, and Burial 61 (Navarro-Farr et al. 2013), discovered in a buried phase of Structure M13-1 that we believe to be the remains of Ix Kaloomte' K'abel.

The diplomatic positions of royal women like Ix Kaloomte' K'abel and Ikoom of Waka' would have required political insights and knowledgeable negotiations on the part of these women. They cannot have been in doubt of the implications of their marital alliances as political strategies and how these would affect both Kaanul and the polities they ruled through marriage. In other words, we do not believe Kaanul women to have been devoid of agency or as akin to pawns in a game—controlled entirely by the male members of their Kaanul families. Rather, we assert that they understood the social roles they were tasked with playing and did so intentionally and purposefully. We discern this from the construction of Waka's monumental landscape, which reflects how Wakeños thought about this alliance and these "outsider" queens, including the city's primary public civic-ceremonial building, termed Structure M13-1, and from evidence at the Northwest Palace. The architecture and associated monumental history indicate that

the Snake queens were revered by Wakeños in numerous ways. This evidence derives from various events of the seventh, eighth, and ninth centuries, including resetting carved monuments, mortuary contexts, and ritual activity at a monumental scale.

Resetting Carved Monuments

Because the examples of Late–Terminal Classic Wakeños resetting stelae in all the site's main plazas as well as on and inside structures are so numerous, we focus on the particularly dramatic efforts at Structure M13-1. Each example represents a clear intention to renegotiate the terms of the original positioning of these monuments, their images, and their texts. This selective retelling of the past serves as a window to how the final inhabitants of the site, under the direction of those exerting post-royal authority, understood these references to Late and Early Classic rulers, emblems of power, and ties to Kaanul and even distant Teotihuacan.

Structure M13-1 is one of the largest buildings at the site and likely served as the primary public civic-ceremonial complex (see Figure 10.1). In its final iteration, it features a north–south in-line triadic formation with northern and southern terraces with superstructures. The building, however, is markedly asymmetrical in plan. The central summit temple is one of the highest points at the site center. The building is fronted by an attached platform or *adosada*, a rare architectural feature in the Maya area. Structure M13-1 spans the width of one the largest open plazas at Waka' and would have been a well-known focal point on Waka's sacred monumental landscape for inhabitants of that polity.

Stela 9

Stela 9 consists of numerous large fragments, ruptured in antiquity, recovered from the front of Structure M13-1. We noted the lower fragments of this monument had been dragged and placed in association with this building, which was also covered in dense deposit remains accompanying that building's final phases (Navarro-Farr 2009, 2016). The stela dates to the sixth century (Guenter 2014), and the lower fragments feature the legs of a standing ruler poised atop a fiery mountain god or K'ahk' Witz. Next to the ruler's right leg is a finely incised text that makes direct reference to a Wite Naah. This term has been translated as "Tree Root House" and glossed by Stuart (2004:232, 237) as "Origin House." This term has also been discussed by William Fash and colleagues (2009) as having referenced physical loci

for fire ceremonialism such as had been practiced by the Mexica-Aztec (see Anders et al. 1991). Fash and colleagues (2009) further argue that the original location for this ceremony was the summit of *adosada* of the Pyramid of the Sun at Teotihuacan. That the Late–Terminal Classic Wakeños dragged this monument with this Wite Naah reference of a ruler standing atop a fiery mountain to Structure M13-1's *adosada* prompted the hypothesis that this building was understood as having has some significant association with fire ceremonialism. We set to test this in our subsequent investigations of the building's *adosada*. In exposing the basal façade of the final *adosada*, our excavations revealed additional portions of Stela 9, including its upper section (Figure 10.2, Plate 10.1). This large component of the stela had fallen forward in antiquity. Our team recorded its position and then re-erected it to its intended upright position facing west toward Plaza 2.

Stela 9's upper section features eroded inscriptions on the superior face and additional well-preserved inscriptions along the sides. The ruler standing atop the K'ahk' Witz faces forward, wearing a massive plumed headdress with a bird's face at the center. The plumage surrounding the figure indicates he wears a backrack. This upper section only features the top portion of this headdress. These fragments of Stela 9 aggregated and/or reset into the terminal façade base of the building's *adosada*—including a fire mountain, a personified maize cob (not pictured), and a massive feathered avian headdress—suggest that these emblems of power and rulership were selected for their narrative purposes during the period in which they were installed at Structure M13-1, sometime during the eighth to ninth centuries CE. We therefore are not implying that these elements of the composition are meant to tell the "exact same story" as Stela 9 once did when whole. Rather, we suggest that those elements selected for reinclusion symbolize elements of sacred power and reference the fire mountain we believe this building represented for ancient Waka'—at least during the eighth to ninth centuries.

Structure M13-1 likely served important regal-ritual functions throughout its life-history prior to the decline of Waka's royal court. It may have been dedicated to royal power through fire rituals originating from Sihyaj K'ahk himself, who notably passed through the site prior to his arrival to Tikal, as recorded on El Perú Stela 15. This remains to be tested further. Nevertheless, it appears the late eighth and ninth century Wakeños reused both structure and stela to reinforce the importance of fire rituals at this key building within the site's ceremonial and political landscape. This narrative continues to the *adosada*'s southern sector, where fragments of a different

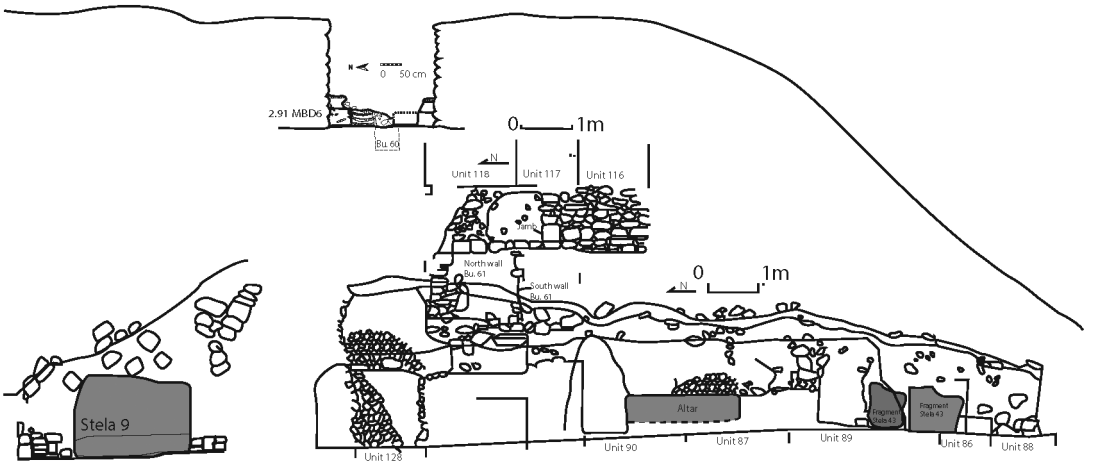

Figure 10.2. Front profile of Structure M13-1 *adosada* face. Stelae 9 and 43 fragments seen in situ. Drawing by Juan Carlos Pérez, Griselda Pérez Robles, Francisco Castañeda, and Olivia Navarro-Farr. Digital trace by Cyrus Hulen. Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

monument were selected for inclusion in analogous fashion into the terminal architecture.

Stela 43

Stela 43 consists of a series of fragments placed on the southern side of Structure M13-1's terminal *adosada* (see Figure 10.2, Plate 10.2). Dating to the Late Classic, the fragments represent less than half of the original monument. It is likely the monument was broken in antiquity and then reaggregated and set within the final lower terrace wall of the *adosada* as was Stela 9 (see Skaggs et al. 2017). The fragments form a fragmentary picture of a standing ruler looking left and clutching a ceremonial bar with serpent imagery emerging from at least one end. Stanley Guenter's initial analysis of the monument indicates that it dates to 702 CE and likely features K'inich B'ahlam II (Navarro-Farr et al. 2013). Although not named, K'inich B'ahlam II ruled in the late seventh and early eighth centuries. His marriage to Ix

Plates 10.1 (*top*) and 10.2 (*bottom*). Waka' Stela 9 upper section (photo by Francisco Castañeda) and Stela 43 in situ (photo by Juan Carlos Pérez). Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

Kaloomte' K'abel, a princess of the Kaanul realm, was vital to maintaining the vassal relationship between Waka' and Kaanul. Guenter (personal communication, 2012) notes that the stela was dedicated on 7 Ahau 3 Cumku, or January 20, 702, and commemorates the 7 Ahau date as there are two earlier iterations of 7 Ahau referenced on these fragments, one in 317 CE and one in 573 CE. The latter of the two dates is associated with a woman named Lady Ikoom, an earlier previously unknown Waka' ruler. Guenter (personal communication, 2012) observed that the damaged inscription on the right side of the stela references the accession date of the Kaanul king Yuknoom Took' K'awiil in 698 CE. Yuknoom Took K'awiil's rule extended from 702 to 731 CE (Martin and Grube 2008).

Of the five fragments of this monument, the two largest were set on the south end of the front of the terrace, facing toward the plaza just like the upper section of Stela 9. These images feature an element of a headdress with a fish nibbling a water lily; this fragment was set upside down, positioned so the nibbling fish and water lily emerge from one end of the double-headed serpent bar wielded by the ruler in the adjacent fragment. The ruler's belt featuring two remaining god heads is also visible. We recovered one small fragment of the monument from the excavated sediment. On the south of the stair side, we documented the other two fragments. One had fallen out of the wall and featured a fragment of text. The other fragment was set near the base of the wall and included part of the ruler's shoulder, feathered headdress, and earspool. Interestingly, this piece was thinner than the others, indicating it had been removed from the primary limestone block in some other period.

These fragments are notable because those who reset them appeared most interested in making iconographic juxtapositions. Nevertheless, we also believe those who reset these pieces were knowledgeable about the ancient historical connections to Kaanul described in the texts. We estimate their resetting to have occurred about two and a half generations after K'inich B'ahlam II's rule (see Arnauld et al. 2017 for more on generational chronology-building). As such, we infer the strong social memories attached to the ties to Kaanul exhibited thereupon would have informed on their inclusion in this narrative. This is analogous to the ways that the avian and fire mountain imagery and the Wite Naah reference informed Stela 9's inclusion within the same narrative. For while the images do not bear visages of rulers, there is a textual reference to Queen Ikoom, a Kaanul woman of an earlier generation. Moreover, we believe those directing the manipulation of these fragments knew that the primary person featured

on Stela 43 was K'inich B'ahlam II—husband to K'abel. Even if those acting here could not read the inscriptions referencing the history, we believe they knew who the historical persons represented were (see Canuto and Barrientos, this volume, for more examples of manipulating fragmented monuments which feature Kaanul-era history). This suggests to us that, in the post-royal ninth century, Wakeños may have been concerned with making symbolic references to well established and understood emblems of power, fertility, and deified ancestry. In addition, they were aware of the historical relationship between Kaanul and its importance for the perpetuation of these symbols. Even without rulers (no visages are present in these images), Wakeños revered the structure as a place of ritual power and the stelae as emblems of its royal history made possible through relationships with ancestral queens of that great realm.

Placing these massive fragments in association with the terminal architecture of this building's final *adosada* constituted a major effort on part of the Late–Terminal Classic population to narrate and reshape their monumental landscape. This is particularly noteworthy when considering that this undertaking was overseen by the nonroyal governing body at that time. This and other architectural and monumental manipulations effectively reshaped material narratives of ancient Waka' in an effort to revive and invoke symbols associated with power and vitality; that these were attached to Kaanul is significant.

Stela 44

Stela 44 was discovered by Griselda Pérez (Pérez Robles and Navarro-Farr 2013) while continuing and consolidating an east–west centerline tunnel. The monument was reset on an angle through the plaza floor as part of an intense construction event that included the entombment of Queen K'abel, the construction of the new *adosada*, and the establishment of the building's new centerline. The monument dates to the sixth century, and Stanley Guenter deciphered the preserved glyphs on the upper sides of the monument (Pérez Robles and Navarro-Farr 2013). The preserved text yields new information about Waka's history and the greater regional politics of the Classic period.

Stela 44, dedicated in 564 CE by the Waka' king Wa'oom Uch'ab Tz'ikin, features a standing ruler with arms cradling a ceremonial bundle. Wa'oom Uch'ab Tz'ikin acceded to the throne in 556 CE. Based on Guenter's reading, it seems likely another man named on the monument, Chak Tok

Ich'aak Wak Ahau, Great Fiery Claw, was Wa'oom Uch'ab Tz'ikin's father. Chak Tok Ich'aak Wak Ahau died just prior to his son's accession. Given that the name Chak Tok Ich'aak was a famous Tikal royal name, it might suggest that Chak Tok Ich'aak of Waka' was a namesake of Tikal's Chak Tok Ich'aak, referencing the two cities' past alliance. Stela 44 also states that Wa'oom Uch'ab Tz'ikin's accession was witnessed by a woman named Ikoom, the same named on Stela 43. On Stela 44, Ikoom bears the royal epithets *sak wayis* and *k'uhul chatan winik*, titles closely associated with Kaanul (Martin 1993, 1997, 2008) and, according to Canuto and Barrientos (this volume), identify Waka' as it does La Corona, as a subordinate to Kaanul. Lady Ikoom was therefore also affiliated with La Corona and Kaanul. She was the queen consort of Chak Tok Ich'aak of Waka' and the mother of Wa'oom Uch'ab Tz'ikin. If that is the case, and if her husband was a one-time vassal of Tikal, then perhaps Lady Ikoom, in marrying Chak Tok Ich'aak, brought Waka' into the Kaanul fold.

Stela 44 indicates that Queen Ikoom preceded Ix Kaloomte' K'abel by at least two centuries and was affiliated with Kaanul. In 2004, David Lee and his colleagues discovered Burial 8 in Structure L11-38 of the Northwest Palace, the interment of a royal queen (Lee 2012; Lee and Piehl 2014). This rich burial dates to the early sixth century and was ritually reentered during the mid- to late-eighth century (Eppich 2011). Given the sex of the interred, her wealth, and the burial's location, together with the date and the evident importance of the interment, this ancient queen was likely Ikoom herself. We believe that her importance, like K'abel, was intrinsically linked to her identity as a royal woman affiliated with Kaanul.

Funerary Rituals

To date, there are three known Snake queens at Waka' (a fourth, Lady Pakal, is associated with the Bat dynasty, which may link her with Calakmul though not necessarily with Kaanul), and investigators have discovered two of their tombs. Lady Ikoom likely laid in the Northwest Palace. Lady K'abel rested in Burial 61 in the *adosada* of Structure M13-1. Although separated by some 150 years, key components of the offerings and construction surrounding their tombs speak to the reverence held for these ancient queens. Their tombs became important markers on the sacred monumental landscapes of the ancient city, containers not just for their earthly remains but for collective memory. This memory served as a mechanism for

their commemoration and veneration. The tombs, and the funerary ritual surrounding them, became focal points for these acts of commemoration and veneration, all of which have been documented archaeologically.

Lady Ikoom

Burial 8 is located in palace Structure L11-38 (Lee 2005, 2012) and included the remains of a middle-aged female laid on a dais in a narrow chamber inside the building (see Lee and Piehl 2014:Figure 5.1). The skull, mandible, and femora were missing, indicating the burial was reentered in antiquity. This behavior was a noted act of reverence involving the invocation of sacred memory associated with a divine ancestor (McAnany 1995). We believe reentering Queen Ikoom's tomb was a testament to her enduring influence at Waka'. During reentry, in addition to manipulating the remains, Wakeños added a single Chablekal Fine Grey vessel to the existing majority Early Classic assemblage as well as an exquisitely crafted *huunal* jewel dating stylistically to the Late Classic (see Lee and Piehl 2014:Figure 5.2a).

Keith Eppich (2011) identifies the initial interment as dating to around 500–550 CE and the reentry approximately 770–820 CE. The date range for the initial interment plus Jennifer Piehl's (2009; see also Lee 2012) report on strontium isotope analysis with possibly overlapping values with those for Calakmul suggest this important royal woman is Stela 44's Lady Ikoom. Moreover, the elaborately carved *huunal* jewel demonstrates it was manufactured with obsidian just as those reported at La Corona (Melgar Tisoc and Andrieu 2016). This manufacturing parallel noted from microanalyses suggests that Burial 8 *huunal* was carved at La Corona. Neighboring La Corona was also closely allied with *Kaanul* (Canuto and Barrientos 2013, this volume; Freidel and Guenter 2003; Martin 2008). From a narrative viewpoint, the idea is that this jewel was produced at La Corona specifically for its inclusion in a reentry ritual into Burial 8. This precious artifact symbolizing power and deified status was a gift for Ikoom some two centuries after her interment. We therefore understand Ikoom to have been considered a living ancestress for both Wakeños and La Coronans.

Ix Kaloomte' K'abel

Ix Kaloomte' K'abel's tomb dates to between the early- to mid-eighth century based on ceramic evidence (Plate 10.3); her death likely occurred around 701–711 CE. The inclusion of numerous funerary vessels and sacred objects reveal an ancient woman of great political and spiritual importance. These objects include sumptuous jades, a painted mirror, numerous

Plate 10.3. Burial 61, Waka'. Photo by Francisco Castañeda. Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

stingray spines, two mosaic assemblages, a garment studded with *Spondylus* plaques, two *Spondylus* bivalve halves, and a small alabaster effigy paint jar with the queen's name. The objects do not just indicate her elevated status but seem to be sacred ritual tools used by an active practitioner of the numinous arts. In short, they match the figure of the queen portrayed on El Perú Stela 34, also known as the Cleveland Stela, a potent, larger-than-life figure holding scepter and shield, with her own magic dwarf and royal, plumed headdress.

Her tomb was built into the stairway of Structure M13-1 Adosada Sub II (Figure 10.3). When Sub II's stairs were dismantled to permit the inclusion of the Burial 61 vaulted chamber, the entire building was subsequently built over, and the upper section of the façade was cut short to permit construction of the new *adosada* phase and repositioning of the building's centerline. This action included the resetting of Stela 44, which was built into the staircase of the subsequent phase. The cementing of many of the associated vessels to the surface of the funerary bench and the presence of textile impressions on the once wet mortar indicates that, from start to finish, K'abel's interment was a rapid affair. We presume that her inclusion into one of the most prominent ritual structures at the site, the rapidity of her burial, and the subsequent construction events were associated with the ceremonial importance of the building. The construction events following her burial, which were likely commissioned by her husband, K'inich B'ahlam II, included the building of the ensuing phase termed Structure M13-1 Adosada Sub I, which consists of two adjoining I-shaped rooms. The westernmost of these rooms opens to three treads leading to a west-facing landing. The three treads are built directly over the top section of Stela 44; specifically, these treads cover the face of the figure featured on the stela, which was reset at an east-leaning angle into the thick plaster floor (see Figure 10.3). After this, Sub II and Sub I were built over by the final terracing. The *adosada* summit incorporates a monumental fire shrine probably built by the successor of K'inich B'ahlam II and K'abel, B'ahlam Tz'am, to commemorate Queen K'abel and situate her as the heart of Structure M13-1. Since this section of the structure was built after K'abel's interment to incorporate a massive monumental hearth, we interpret this feature, which was a significant alteration to the monumental landscape of Waka', as a Late–Terminal Classic revival of the Wite Naah fire cult at Waka's primary public *adosada* building.

B'ahlam Tz'am was defeated not long after the construction of the fire shrine by Tikal's star war in 743 CE; this event is noted on Tikal Lintel 3

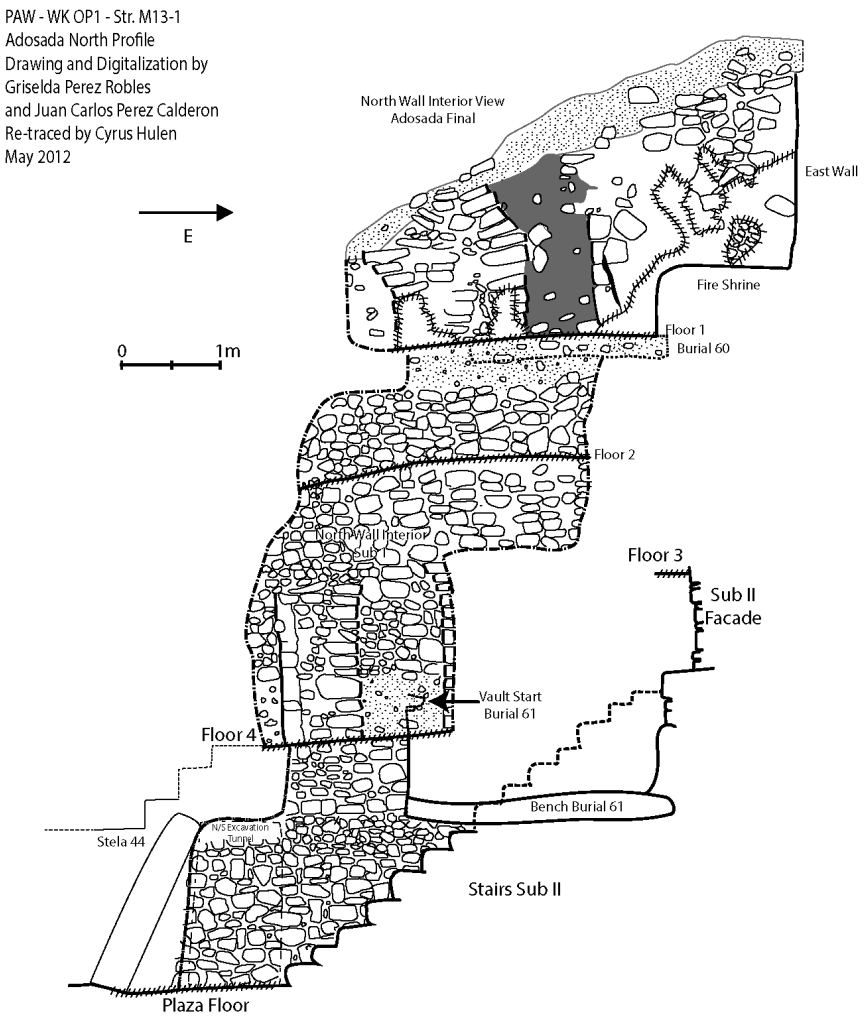

Figure 10.3. North profile of Structure M13-1 *adosada* construction sequence. Drawing and digitization by Juan Carlos Pérez and Griselda Pérez Robles. Digital trace by Cyrus Hulen. Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

recounting the capture of one of Waka's patron deities (likely the Akan Death God noted as one of three patron deities on El Perú Stelae 44 and 16). This capture would have weakened the court significantly. The court struggled forward as there are two subsequent royal pairs including Lady Pakal affiliated with the Bat dynasty and her unknown husband referenced on El Perú Stela 32, followed by the brief rule of Aj Yax Chow Pat, who

presumably also married (although this queen is not named or known to us) referenced on Stela 39 (Guenter 2014). The date associated with the final rulers is hazy and either references 760 or 801 CE (Guenter 2014).

Ritual Activity at a Monumental Scale

Fire Ceremony and Late–Terminal Classic Deposits

Excavations at the summit of the *adosada* were carried out to define surviving architecture. Just below the ground surface excavators revealed numerous life-sized fragments of modeled stucco in various forms including busts and heads of human and god-like figures likely originating from an architectural façade. This 20 m^3 deposit filled the U-shaped masonry shrine, opening west toward the plaza below. The infilled space included a heavily burned architectural feature at the far eastern end that had undergone multiple burning episodes before being reconstructed into a covered throne feature. This throne was assembled with large flat limestone flag stones, covered in stucco, and painted. Subsequently, it was reopened, those flat stones were overturned, and the entire area was heavily burned and infilled again with the above-mentioned stucco. The original fire shrine, before it was converted into a bench and reopened and refired, included a sequence of strata comprising ash lenses embedded between capping layers of packed limestone (Figure 10.4). Flotation analyses of macrobotanical remains therein conducted by Clarissa Cagnato (2013, 2015) revealed the inclusion of maize, *Chenopodium*, and other weedy plants as well as minute fragments of wood, which had preserved paint layers.

The evidence suggests this fire shrine was built to ritually burn botanicals and other objects, including painted wooden relics dating to the early part of the seventh century (Cagnato et al. 2017). We believe this ceremonialism was a revival of the *Wite Naah* fire cult known from the Early Classic and referenced on the repositioned Stela 9 fragments. The commissioning of this architectural space, presumably by B'ahlam Tz'am, would have followed the aforementioned Structure M13-1 Adosada Sub I room group and the staircase encompassing Stela 44, which was likely planned by K'abel's husband, K'inich B'ahlam II, in her honor. The location of her interment encompasses the *Wite Naah*, supporting our assertion that she was considered its heart in the Late Classic and Late Terminal Classic periods at the site.

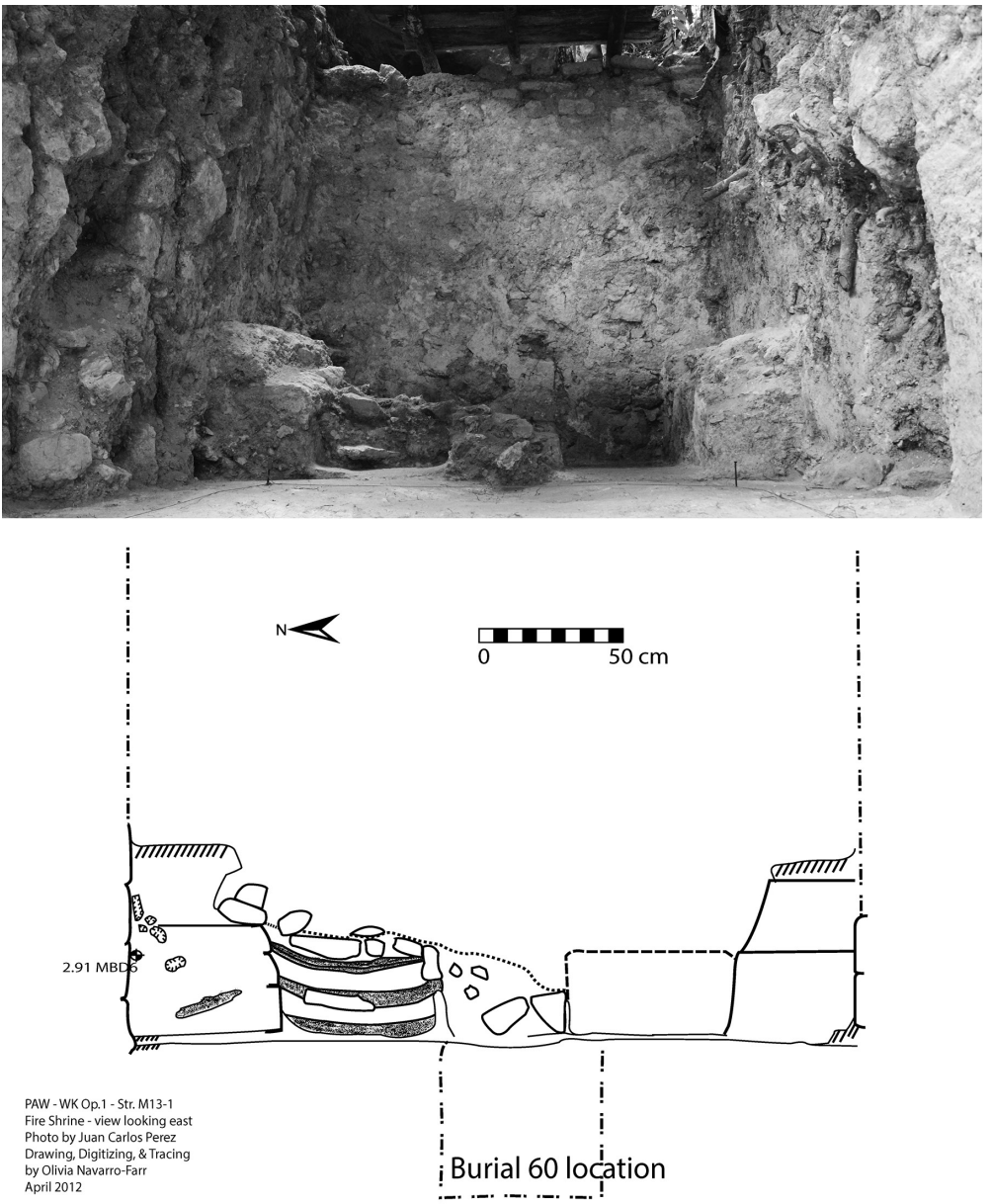

Figure 10.4. Photo (*above*) and profile drawing (*below*) of Fire Shrine at Structure M13-1 (view looking east). Photo by Juan Carlos Pérez. Illustration by Olivia Navarro-Farr. Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

These recent investigations at Structure M13-1 provide greater interpretive context for the vast and diverse deposits discussed at length by Olivia Navarro-Farr (2009, 2016) and Navarro-Farr and Ana Lucía Arroyave Prera (2014) that were carried out by nonroyal Wakeños throughout the ninth and tenth centuries. These deposits represent numerous cumulative ritual revisitations by non-elite people in reverence for and in memory of this great queen and her important role as an ancestress of Waka'. They are part of the ritual palimpsest of this building and served as a locus for the installation of emblems of royal power and fecundity.

Palace Deposits

Excavations in 2006 at the Northwest Palace inside a gallery of rooms (Structure L12-4), over which a terminal staircase was eventually built providing access from Plaza 4 westward toward the main upper patio, uncovered the Ofrenda de Tambores. This deposit was so named due to the presence of numerous fragments of these instruments and other ceramics underneath a vast layer of elaborately rendered stucco fragments (Lee and Gámez 2007). Interpretations of this deposit have been challenging due to the complexity of the stratigraphy, evidence for reentry episodes, and the epigraphic data of the period(s).

Continued investigation of Structure L12-4 (Pérez Robles et al. 2018) reveals the Ofrenda de Tambores to be increasingly complex. Archaeologists discovered an earlier and distinct six-tread stairway that once gave access to the gallery. The lowermost blocks of this staircase had been torn out in antiquity. This was therefore likely the original location of the carved and inscribed stairway blocks associated with King K'inich B'ahlam II when he was vassal to Kaanul-regime king Yich'aak K'ahk' in the late seventh century CE. The inscribed blocks were later reset in various proximate locales (Piehl and Guenter 2005) in memory of this earlier history by the final king, Aj Yax Chow Pat. Griselda Pérez Robles and colleagues (2018) discovered additional drums, cylinders, pitchers, bowls, plates, figurines, whistles, macrobotanical materials, bone needles, flint knives, and obsidian flakes and cores (Figure 10.5) as well as two sacrificial burials of young men, areas of intense burning, and the construction of nonformal walls. Both Lee (2012) and Pérez Robles and colleagues (2018) see the events at the palace, resulting in this massive multiroom deposit, as evidence of transformative events at Waka' during the eighth and ninth centuries.

In 743 CE Tikal's king Yik'in Chan K'awiil defeated Waka' and marked his victory on wooden Lintel 3 set inside Tikal's Temple 4 (Martin and

Figure 10.5. Recent investigations of the Ofrenda de Tambores. Photos by Juan Carlos Pérez. Images courtesy of Proyecto Arqueológico Waka' and the Ministry of Culture and Sports of Guatemala.

Grube 2008). Pérez Robles and colleagues' (2018) work on the Ofrenda de Tambores, building on Lee's work (2012), determined the palace's eastern façade, overlooking a gallery of rooms, was once ornately adorned with brightly colored modeled stucco. This façade was destroyed in a destructive termination event following Waka's 743 CE defeat. This destroyed place was later ritually healed by a subsequent ruler, again likely Aj Yax Chow Pat. Therefore, what Lee and Laura Gámez (2007) initially discovered was ultimately understood by Pérez Robles and colleagues (2018) to be carefully relayered depositions that included the removed stucco elements from the destroyed façade reaching up to rooms' vaulted roofs. The stucco elements were laid atop the deposits of fragmented drums and other objects, which were in turn redeposited atop the remains of the two intrusive sacrificial burials. The burials and relating events were accompanied by intense and episodic burning. Once infilled, the entire area was built over with a new structure and staircase. That final staircase included some of the aforementioned repurposed hieroglyphic blocks at its base. Some blocks featured ballplayers, including Kaanul ruler Yuknoom Yich'aak K'ahk', and one block featured the inscription "K'uhul Kaanul Ajaw Ix Kaloomte'" translating to "holy Kaanul ruler, lady supreme warrior." This title, with the female "Ix" prefix, certainly refers to Ix Kaloomte' K'abel and similarly designates her as a supremely powerful figure looming larger than her husband. The reconfiguration of this and other blocks in the palace's final stairway, in ways similar to stelae repurposing at Structure M13-1, underscores the attachment to strong social memory associated with these Kaanul-era women at Waka'.

The events Pérez Robles and colleagues (2018) reconstructed were meant not only to encapsulate the terminated space but may also signal a kind of ideological recovery in the decades following Waka's defeat by Tikal in 743 CE. The final phase of these activities, the construction of the final staircase, is temporally associated with the site's last ruler, Aj Yax Chow Pat, whose brief reign followed that of Lady Pakal and her unknown husband. However, as Eppich's (2011) work at the Chok Group, a short distance from Structure M13-1, indicates, these efforts were not successful in the long term. Palace-based governance faded during the ninth century. The findings from the Chok Group (Eppich 2011; Eppich and Haney 2018) suggest power was wielded by elites there following the decline of the court. We suggest a transition of power took place after Aj Yax Chow Pat's rule from divine kingship to a kind of corporately held governance.

Final Thoughts

The ways in which ancient Wakeños revered the symbols associated with the Kaanul-affiliated rulers of their city underscore the success of that regime. That regime and Waka's place in it centered on the generations of Snake queens who lived their lives in that city among its people. We can imagine, from the long-revered memories held by its inhabitants, that these ancient queens, notably K'abel and Ikoom among them, were regarded for their political and spiritual abilities, their powerful roles as ancestresses of the populace, and undoubtedly for their prowess in the arts of war. Despite the defeat of Waka' by Tikal, Wakeños persevered in the preservation of the memories of these queens through continued manipulation and transformation of the city's monumental landscape, revisiting their interments, ritually enshrining their resting places, and making continued efforts to reshape the fragments of sculpture that spoke to their legacy.

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11

Landscapes of Warfare, Détente, and Trade in the Maya West

CHARLES W. GOLDEN AND ANDREW K. SCHERER

The concept of Maya "landscapes" lies at the heart of this volume. Landscape occupies a strange dual life in English, being both the object of human experience and the representation of that object. Indeed, the concept of landscape as a distinct phenomenon out in the world, that can be experienced through bodily movement and the human senses, is historically informed in Euro-American thought by the representations of landscapes that have emerged since the Renaissance (Cosgrove 1984, 1992; Olwig 1996). We assume that the Maya of the Classic period (250–900 CE) also had landscapes in the experiential sense: they moved across the terrain, they felt the rain and vegetation, and they sweltered in the tropical lowland heat just as we might today. However, the cultural understanding and representation of that experience was significantly different, informed by understandings of the relationship between person and place and a political world that differed dramatically from that of twenty-first century Mexico and Central America.

One challenge we encounter in considering precolumbian landscapes is that we lack the point of entry of something we recognize as landscape artwork representing the ancient, indigenous experience of landscape. The linkage of person and place that so explicitly defines landscape art in many cultures is not immediately obvious for the Classic Maya. Other than a few exceptional extant works, as at Chichen Itza, where murals depict a battle raging across the land (Ringle 2009), surviving Maya art does not focus on people positioned against a broad physical background. Rather it tends to position bodies in relationship to one another, often in the enclosed spaces of royal reception rooms, ball courts, or other architectural contexts.

Bodies were painted and sculpted in a wide array of media, but inscribed stone monuments were particularly potent because they united the image and self of the ruler and captive in perpetual performance (Houston and Stuart 1998; Houston, Stuart, and Taube 2006; Stuart 1996). Not only were the figures themselves conceived of as vivified and active agents, the texts inscribed on monuments were likely performed long beyond the lifespan of the rulers and captives depicted, much as modern verbal and dance performances create a space and place beyond that of the life experiences of the performers (Gossen 1974:398–399; Hull 2003:375–376). Because the actions depicted on these monuments are ongoing and the people portrayed perpetually present, the implication is that the bodies and the places they metonymically represent are also perpetually present (Golden 2010; Golden and Scherer 2013; Houston and Stuart 1998; Hull 2003; Scherer and Golden 2014; Stuart 1996).

Thus, we argue in this chapter that precisely because royal and noble Maya bodies of the Classic period were intimately tied to place, and images were inextricably linked to the self, the figures presented on monuments act as synecdochal representations of landscapes. Nor do these represented selves simply invoke static places. Instead, they constitute dynamic representations of movement across the landscape. Indeed, David Stuart (2007) notes that monuments like Piedras Negras Panel 12, which depicts the ruler of that site dominating captives from Yaxchilan, Lakamtuun (perhaps the archaeological site of El Palma), and Santa Elena, are more than simply statements of military dominance. As Stuart (2007) observes, Yaxchilan sits astride the main stream of the Usumacinta, while Lakamtuun and Santa Elena sit on two of the Usumacinta's major tributaries: the Lacantún and San Pedro Mártir Rivers. Panel 12 therefore represents a vivid statement of control over the riverine landscape and movement through and across it.

In the remainder of this chapter, we first discuss our understanding of landscapes generally and then move to engage the landscape of the Usumacinta River valley (Plates 11.1 and 11.2). We focus particularly on the physical Usumacinta landscape and the human experience of it that reciprocally shaped political and economic action. Movement during the Classic period was defined by friction resulting from the physicality and political dynamics of the landscape. It is this friction and attempts to increase or reduce it through warfare and marriage alliances that shaped travel and trade during the Classic period and, in turn, was crafted in stone at Piedras Negras and Yaxchilan. We present several potent, exemplary cases of monuments

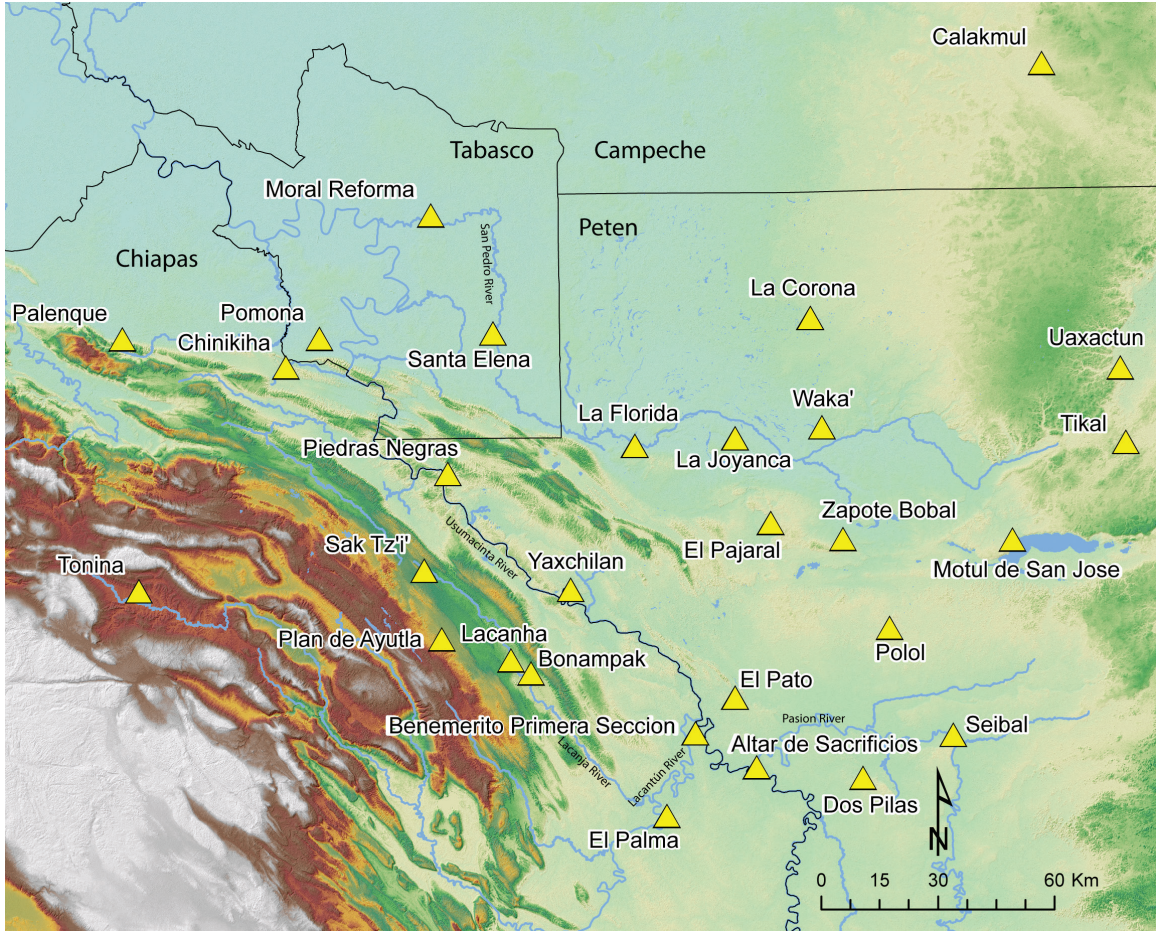


Plate 11.1. Regional map showing dynastic centers mentioned in text (map by C. Golden).

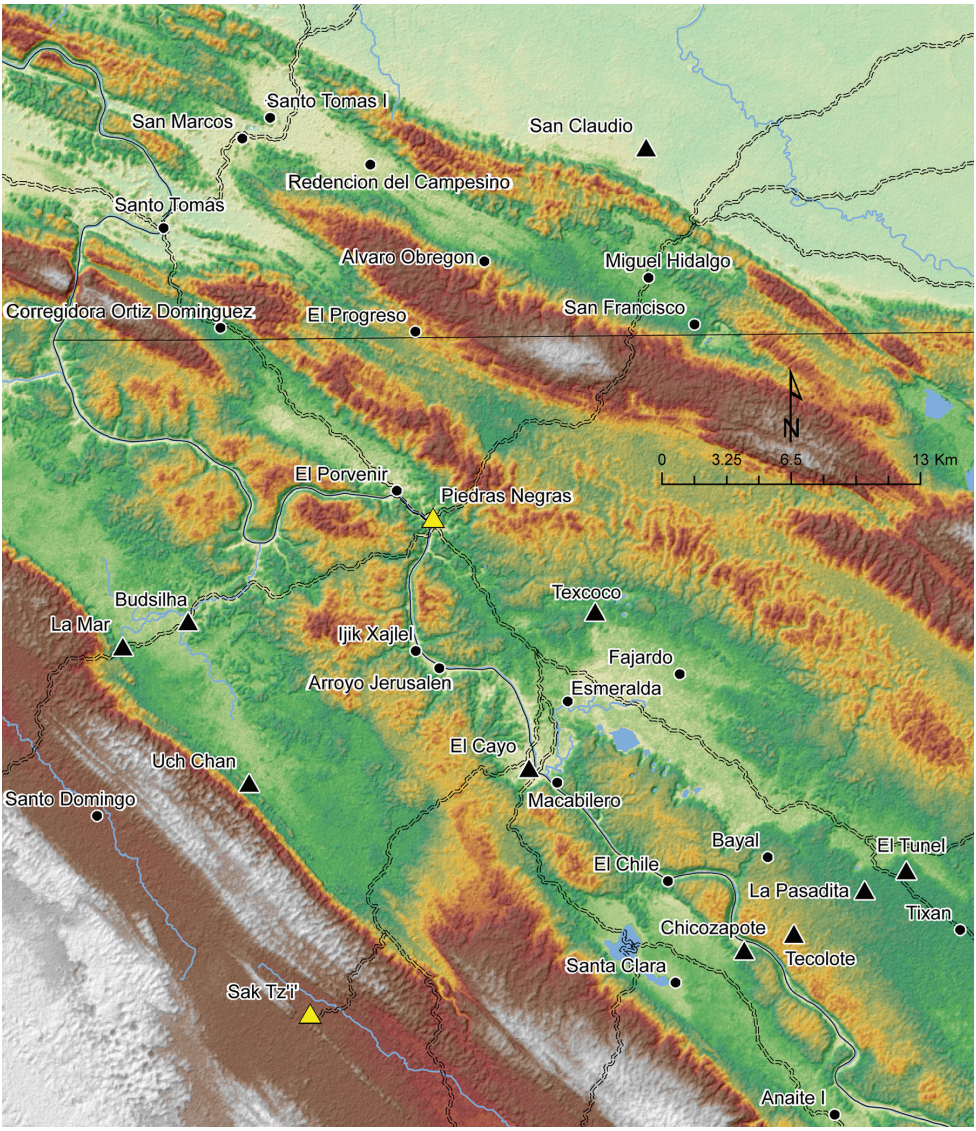


Plate 11.2. Local map showing noble centers and smaller settlements mentioned in text. Dashed line represents least-cost routes from dynastic capitals to Piedras Negras (map by C. Golden using ASTER 30 m DEM).

and architecture that worked together to represent and map movement and friction; in so doing, these monuments acted as tools intended to craft experience and understandings of landscapes much as modern maps and landscape art might.

Landscapes as Bodily Experience

We begin, then, with a brief discussion of landscapes as concept, experience, and imagery. Colloquial discussions of landscapes often frame them in terms of the natural environment, as in the glorious landscapes of Yosemite or the spectacular views from the pyramids of Tikal. Alternatively, landscapes can be the result of "landscaping," producing an obviously modified and crafted environment as with the formal gardens of Versailles or the tidy front yard of the American home planted with flowers and a picket fence.

These two notions of landscapes, the natural park and the formal garden, current in North American thought and English-language usage may seem diametrically opposed. Both, however, require the spatial and temporal arrangement of social relationships, particularly as they relate to issues of power and authority (Knapp and Ashmore 1999), to achieve understanding. Both require work to create, maintain, or transform. Representations of either notion of landscape, in what museums would typically call "landscape art," work to frame human control by positioning the viewer to see power relationships in ways that are effortlessly naturalized. Landscape art acts to create the imaginary, for instance, of public, national ownership over parklands, or the lordly oversight of workers in the field and gardens by singular authorities (Ingold 1993).

Those representations work to shape expectations and understandings of the physical world. Landscapes as depictions, crafted as acts of political representation, shape expectations of an encounter with an environment inscribed by previous human and nonhuman action that contours movement and potential action (Cosgrove 1984; Ingold 1993; Lefebvre 1991; A. Smith 2003). Landscapes are thus palimpsests produced through lived experience when human engage with the concrete possibilities and limitations of the physical context (e.g., roads, farm plots, barricades, hills, streams, and house lots) as structured by social understandings of inclusion or exclusion that shape the use of, and access to, places. Bodily motion in turn shapes subsequent encounters of the landscape, both of the individual

in the present and of the later travelers who literally and figuratively follow in one's footsteps.

This movement and experience of bodies upon, across, and through landscapes can have a profound effect on political practice. Bodily practice will alter the shape, meaning, and understanding of a landscape over time. The performance of space and place, the enactment of landscape, actively creates an epistemologically complete and ontologically valid bodily experience across scales of movement from the natal home to the limits of one's life experience (Lefebvre 1991:38–46; A. Smith 2003:73).

The Physical Landscape of the Usumacinta River Valley

What, then, of the Usumacinta River region's landscape, its representations and experience? Our own interpretations are shaped by nearly two decades of experience walking (often trudging or slogging) and driving across the karst hills, swamps, and narrow valleys over the course of regional archaeological survey in the Sierra del Lacandón National Park in Guatemala and across the Usumacinta River in Chiapas. Deep forest and blazing hot ranchlands may be quite different from the vegetation regularly encountered by people during the Classic period, but we feel confident that, together with the insights we have gleaned from conversations with our local collaborators, our encounters with the Usumacinta region provide us with reasonable experiential data to understand ancient movement.

The first thing that one must understand about the Usumacinta River is that it varies dramatically along its length (Aliphat Fernández and Caso Barrera 2006; Canter 2007). Where the easily navigable tributaries like the Lacantún and Pasión join to form the main stream of the Usumacinta there are long stretches of flat water that would have facilitated canoe transport in the past, just as it does motor-launch travel today. Shortly below Yaxchilan, however, the Usumacinta enters a steep-walled canyon with intermittent, occasionally deadly, rapids that would have been difficult to navigate in a heavily laden dugout canoe. Teobert Maler's (1903:112) canoe was smashed in the Chicozapote (also called Anaite) rapids below Yaxchilan, and we have witnessed firsthand the deadly result of poor navigation, with overturned boats killing dozens of people. Canoe travelers would have portaged around the rapids or left the river entirely for the few overland routes to adjacent inland valleys.

At such portage points the lords of Yaxchilan established a series of

fortified subsidiary political centers during the Late Classic period to facilitate the control of overland travel and protect the kingdom's northern border against rivals from Piedras Negras (Scherer and Golden 2009, 2014; see Martin and Grube 2008:116–153). Each of these centers, including El Chicozapote, Tecolote, La Pasadita, and El Tunel, was administered by a lord subordinate to the ruler of Yaxchilan and is associated with systems of masonry walls that cross narrow valleys (Scherer, Golden, et al. 2017). Southeast of El Tunel is Oso Negro, a palatial site adjacent to a pass eastward across the Sierra del Lacandón and the Classic period Hix Witz kingdom, centered on El Pajaral and Zapote Bobal (Fitzsimmons 2006; Gámez et al. 2007; Martin and Grube 2008:122, 124, 131, 135; Stuart 2003, 2008).

If a traveler chooses to move northward over land in Guatemala, from the Yaxchilan borderlands into the Classic period domain of Piedras Negras, the narrow valleys give way to an expansive *bajo* dominated by the Laguna Lacandón and surrounded by a series of smaller lakes and extensive marshes. Although footpaths were possibly maintained through the marsh during the dry season, we have crossed these wetlands on foot during the rainy season and found ourselves hip-deep in water and mud; on one occasion we spent approximately 12 hours to cross perhaps 4 km. Travel in all seasons was almost certainly more feasible along the uplands of the eastern edge of the valley.

Across the Usumacinta River from El Cayo, moderate-sized settlements such as Esmerelda and Fajardo are located within a broad valley north of the marshland that surrounds the Laguna Lacandón (Golden et al. 2008). Although there are mounds on most hills, the larger population centers tend to be on valley floors, and we have not yet found walls associated with them. A nineteenth-century logging road runs north from Esmeralda to Piedras Negras, and the same route was almost certainly used in ancient times. Defensive walls have been found on the approach to Piedras Negras, suggesting some vigilance within the kingdom itself (Scherer and Alcover Firpi 2016; Scherer and Matsumoto 2017).

The overall impression is that inhabitants in this portion of the Piedras Negras kingdom were unable or unwilling to control movement across the landscape during times of peace or conflict, although there are two exceptions to this pattern. One is Macabilero, just across the Usumacinta from El Cayo. Perched on a steep hilltop, perilous chasms and stout walls protect epicentral Macabilero (Alcover Firpi 2016; Alcover Firpi and Rodas 2017; Golden et al. 2000; Shook 1998). Macabilero is undoubtedly a fortress, but ongoing research by Omar Alcover and colleagues (Alcover Firpi 2016;

Alcover Firpi and Rodas 2017) demonstrates that it is a Preclassic redoubt, largely abandoned by 350 CE.

There is also Texcoco, a site we have reconnoitered but not excavated. A large ridgetop settlement with monumental masonry architecture, Texcoco was well positioned to control access through a gap in the mountains providing easy passage to the east. Texcoco thus guarded an important route toward the Hix Witz kingdom and the kingdoms of the San Pedro Mártir River (Guenter and Safronov cited in Zender 2002:167; Martin and Grube 2008:145).

On the river below El Cayo, portages become available again at Arroyo Jerusalén on the Chiapan shore just above Piedras Negras, where there is a significant archaeological site in the modern community (Schroder et al. 2017). From Arroyo Jerusalén one can travel on foot west across hilly terrain with abundant ancient settlement to the site of Budsilha, and then to La Mar, whose rulers were important allies of the Piedras Negras dynasty (Martin and Grube 2008). Across the river from Arroyo Jerusalén is a narrow valley leading northeast and offering a footpath to Piedras Negras. Piedras Negras itself sits at a choke point, where the narrow valley meets the river. The terrain makes it all but impossible to proceed overland without entering the city, and defensive walls block some southern and northern approaches (Scherer, Pérez Robles, et al. 2017).

Although Piedras Negras itself had good canoe landings, the finest port along this stretch of the river is El Porvenir. Marking the northern limit of the Piedras Negras suburban settlement, El Porvenir has a broad sand beach at low water and access points to inland pedestrian routes heading north and south (Canter 2007; Golden et al. 2016; Golden and Scherer 2013; Kingsley et al. 2012). Armando Anaya Hernández's (2005) extensive survey through the adjacent valleys of Tabasco—some with passes blocked by ancient walls—has revealed a series of sites well situated to control travel through the region.

On the river below El Porvenir, the walls of the canyon rise precipitously, and there is a series of powerful rapids, beginning with the evocatively named Cola del Diablo (Devil's Tail). Once past the Cola del Diablo one can land in Mexico at a small beach near where the Busilja River drains in a series of magnificent falls into the Usumacinta. From there it is a short hike inland to the sites of Budsilha and La Mar. Below the Busilja Falls, the rapids grow increasingly ferocious. A significant port center grew up at Boca Chinikihá, providing a final opportunity for portage where the Chinikihá stream enters the Usumacinta and that river enters into the canyon's

tightest stretch (Maestri 2018). While expert boatmen can safely make the run to Tenosique and back, people also die in these rapids, and we were ourselves swamped here during a boat ride from Yaxchilan to Tenosique.

Landscapes of Trade and Exchange

GIS models of least-cost routes between polity capitals including Piedras Negras and Yaxchilan reinforce our experiential data. Travel is channeled through a limited number of valley routes, and only in a few locations is it feasible to cut across the jagged sierras to the broad Tabasco floodplains or the central Petén (Plates 11.3 and 11.4; see also Anaya Hernández 1999, 2005; Davenport and Golden 2016; Golden and Davenport 2013; Golden and Scherer 2013). Such constraints significantly affected the movement and exchange of people and goods and created friction exacerbated by the political machinations and conflicts of Piedras Negras and Yaxchilan. Note particularly that routes into Piedras Negras from the south tend to merge in Yaxchilan territory, while those descending from the north toward Yaxchilan largely bypass Piedras Negras.

We can see the impacts of this friction on the material record from Piedras Negras, and we begin our discussion with ceramics. The Late Classic Piedras Negras polychrome pottery emblematic of producers in and around the dynastic center is the resist-decorated Santa Rosa Group at Piedras Negras (Adams 1971; Bachand 1997; Ball 1977; Holley 1983; Muñoz 2006). Although these materials show affinities with pottery found across the Maya Lowlands, resist-decorated ceramics tend to be in the minority of site assemblages elsewhere in the Maya Lowlands. At Piedras Negras, the diverse types and varieties of the Santa Rosa Group represent the majority of polychrome pottery for much of the Late Classic period and demonstrate local technological innovations (Bachand 1997; Holley 1983; Muñoz 2006).

Yet, importantly, the distribution of resist-decorated pottery from the Santa Rosa Group as a majority of Late Classic polychrome ceramics appears to correspond roughly with the limits of the Piedras Negras polity (Borges Barrientos et al. 2018; Golden et al. 2008; Jiménez Álvarez et al. 2014; Muñoz 2004, 2006). The frequency of resist-decorated pottery in the Santa Rosa Group decreases dramatically upriver from Piedras Negras toward the border with the Late Classic period Yaxchilan polity and northwest toward Palenque (Golden et al. 2008; Jiménez Álvarez et al. 2014; Scherer and Golden 2009).

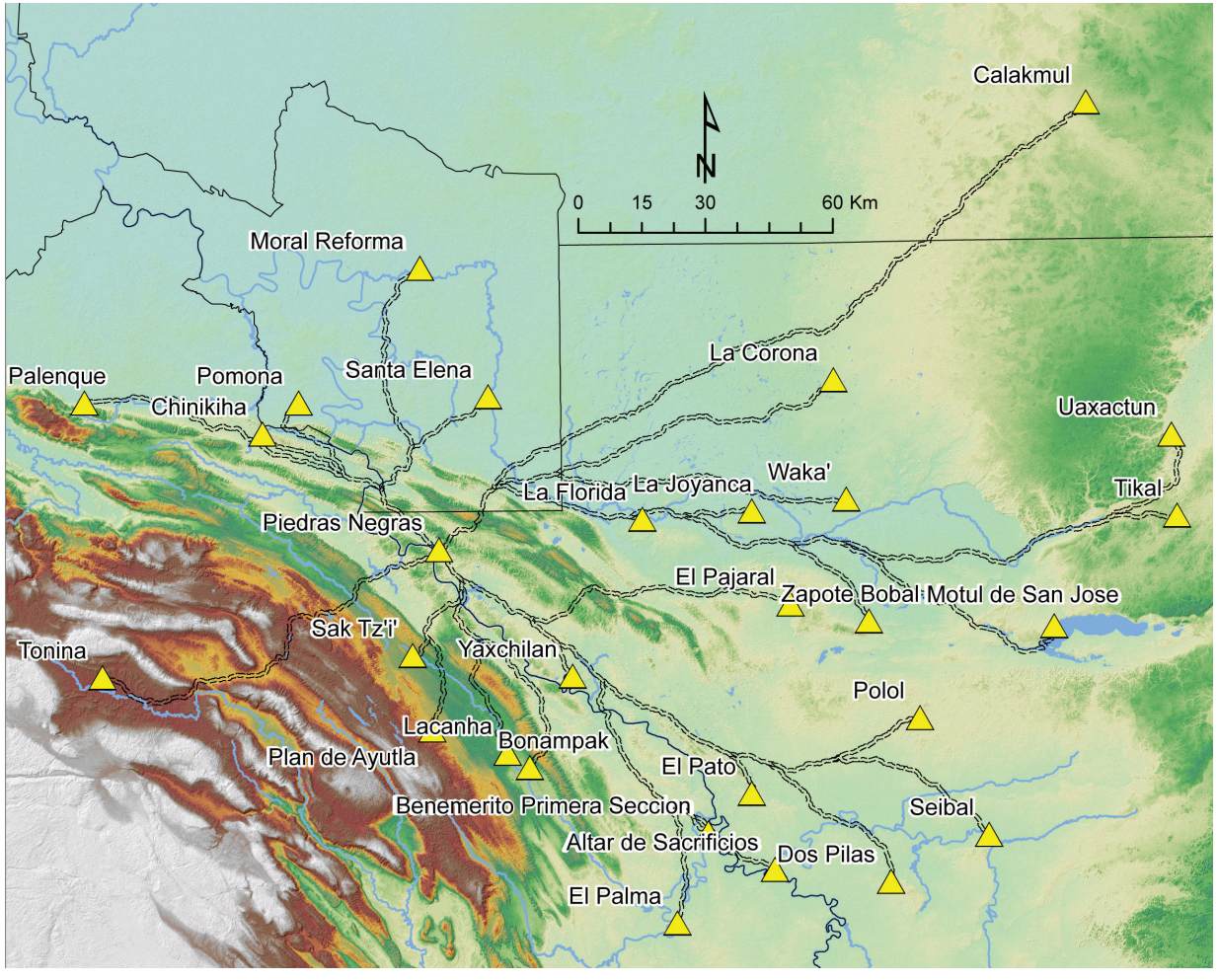


Plate 11.3. Least-cost paths from dynastic centers to Piedras Negras modeled using ASTER 30 m DEM (map by C. Golden).

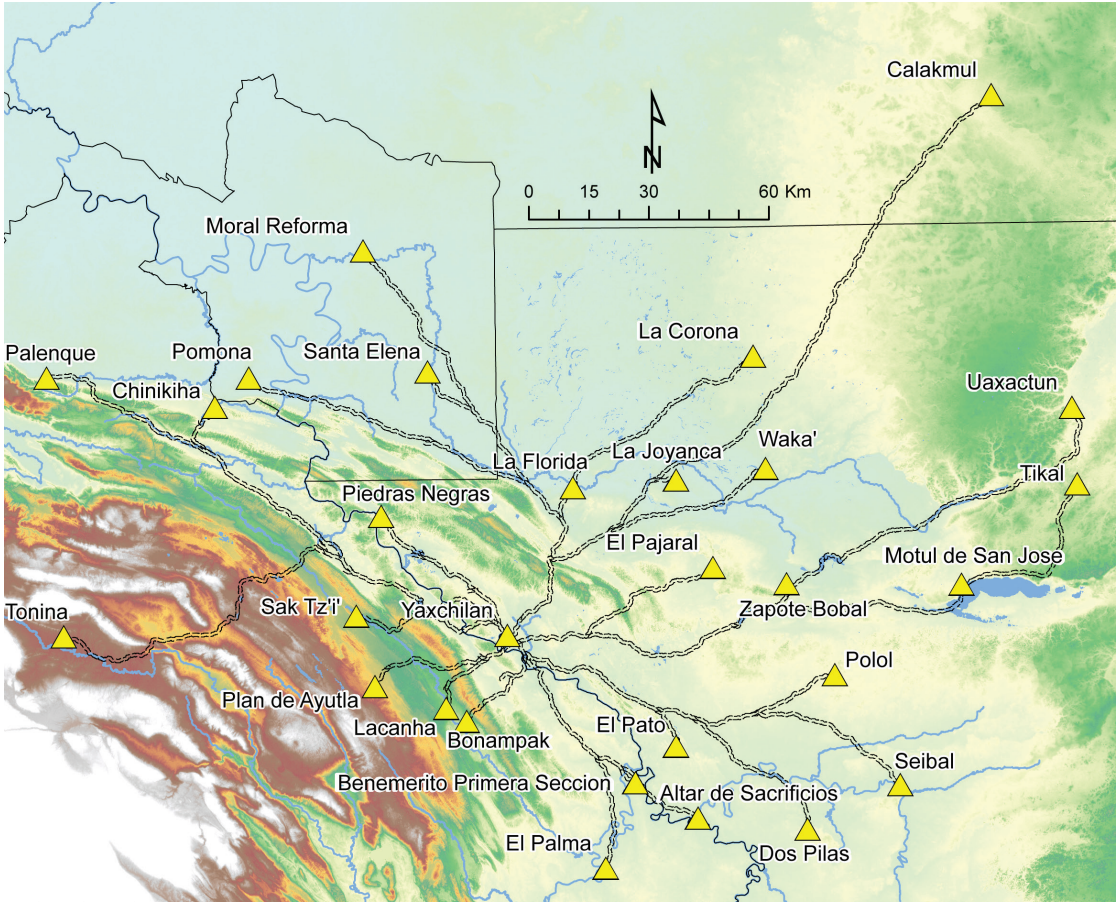


Plate 11.4. Least-cost paths from dynastic centers to Yaxchilan modeled using ASTER 30 m DEM (map by C. Golden).

In contrast, the Late Classic polychrome ceramics typical of sites in the Yaxchilan region are similar in decorative technique, motif, and palette to the pottery from the central Petén and the Pasión River region (Adams 1971; López-Varela 1989, 1992, 1994, 1995; Sabloff 1975). In neighboring regions surrounding Palenque and Chinikihá, the assemblages are dominated by other decorative and technological approaches, with a particular emphasis on fine-paste wares (e.g., Jiménez Álvarez 2009; Jiménez Álvarez et al. 2008; Jiménez Álvarez et al. 2014; Rands 1974, 2007; Rands and Bishop 2003).

Thus, the polychrome ceramics and fine-paste wares of Yaxchilan, Palenque, and Chinikihá are differentiated from those of Piedras Negras by distinct decorative technologies. Especially notable is the Chablekal Group of fine-paste ceramics that first appears at approximately 750 CE at Palenque, their most likely area of manufacture (Bishop and Rands 1982; Foias and Bishop 1997, 2005). Chablekal ceramics appear shortly thereafter in a wide variety of elite and non-elite residential contexts at Piedras Negras (Muñoz 2006:124–128). Although compositional analysis by Ronald Bishop and Robert Rands (1982) demonstrates that there were several loci in the Palenque region where such materials were produced, the Chablekal materials at Piedras Negras arrived from only a few of these.

On the basis of instrumental neutron activation analysis studies and their abundance at Yaxchilan and surrounding sites, it seems that fine-paste wares in the Tres Naciones and Altar Orange Groups may originate from the area around Yaxchilan itself (Bishop and Blackman 2010; Bishop and Rands 1982; Cabadas-Báez et al. 2017; Golden and Scherer 2006; Houston, Escobedo, et al. 2006; López-Varela 1989). At Piedras Negras, however, Tres Naciones and Altar Group fine-paste ceramics are vanishingly rare. The presence of imitation fine orange ceramics at Piedras Negras and hinterland sites such as El Porvenir and El Infiernito may constitute efforts by potters to provide local wares to supplement pottery that could not be sourced through trade (Kingsley et al. 2012; Muñoz 2004:24–25). True imports were largely limited to a few post–dynastic collapse contexts at Piedras Negras and El Porvenir, where they are associated with Early Postclassic materials (Holley 1983; Kingsley et al. 2012; Muñoz 2006).

The distinct limits of distribution in pottery imported to, and exported from, Piedras Negras do not simply reflect physical challenges to transportation or the limits of technological expertise. Rather, we argue that they represent choices by consumers of pottery available to them in marketplaces as well as the political and economic friction that challenged the

movement of these goods over the landscape. This friction increased toward Piedras Negras and decreased farther from the dynastic center.

The appearance of Altar and Tres Naciones ceramics at Piedras Negras in the years leading to and following dynastic collapse at Piedras Negras and Yaxchilan, ca. 810 CE, suggests that exchange along the Usumacinta River opened up as political friction diminished. We also argue that the provisioning of Chablekal materials from only a few sources suggests that these were zones where the economic and political hold of the Palenque dynasty was weaker (Liendo Stuardo 2005; Stuart and Stuart 2008).

Jade artifacts, as prestige imports, provide further evidence for the variable friction of movement and trade on the landscape. Of the 127 formal burials recovered to date in excavation at Piedras Negras, only 12 (9.45%) contained jade or other greenstones (Coe 1959; Houston, Escobedo, Scherer, et al. 2003; Scherer et al. 2007; Schnell and Scherer 2017). The most elaborate burials yet excavated at Piedras Negras are Burial 5 and Burial 13, the tombs of K'inich Yonahl Ahk II ("Ruler 3"; died 729 CE) and Itzam K'an Ahk IV ("Ruler 4"; died 757 CE), respectively. These kings governed Piedras Negras during the height of the dynasty's power, and indeed Burial 5 contained 199 greenstone artifacts, while Burial 13 had 108 such items. Yet the courtiers who entombed these rulers felt the need to supplement both burials with hundreds of large low-fired ceramic beads painted blue in emulation of jade (Coe 1959; Escobedo 2004).

When we consider the abundance of jade at Palenque, it puts the finds at Piedras Negras in perspective. Of 51 burials at Palenque for which artifact data are available, 35 (or 68.6%) possessed at least one jade object. The most opulent burial from Palenque was the tomb of K'inich Janaab Pakal (died 683 CE), which contained 736 pieces of jade (Ruz Lhuillier 1973), including an impressive jade mosaic mask, tabulated here as a single object.

Comparably published data for artifact counts are not available for the Yaxchilan burial series. However, the published data strongly suggests that the Late Classic period rulers of Yaxchilan enjoyed greater access to jade resources than their peers at Piedras Negras. As a point of comparison, Tomb 3, the likely grave of the queen Lady K'abal Xook (who died in 729 CE, the same year as the Piedras Negras K'inich Yonahl Ahk II), contained 436 pieces of jade and other greenstone. Tomb 2, possibly the grave of Itzamnaaj Bahlam III (Shield Jaguar III), contained 476 objects of jade and greenstone (García Moll 2004).

The relative paucity of jade at Piedras Negras, and the need to supplement burial offerings with clay beads, is an indicator of the physical, political,

and economic friction affecting the acquisition of jade at Piedras Negras. Recent excavations by Alejandra Roche Recinos and colleagues in the S-sector marketplace of Piedras Negras have uncovered evidence that broken or otherwise less desirable jade and greenstone jewels were collected for recycling into ever-smaller beads and dental incrustations (Scherer, Pérez Robles, et al. 2017; Roche Recinos 2017; Urquizú et al. 2018). Thus, while friction on the landscape limited the entry of gems into Piedras Negras, recycling supplied a demand for greenstone unmet by imports.

The most common import at sites in the Usumacinta region is obsidian. Obsidian at all sites comes primarily from the Guatemalan Highlands with smaller admixtures from central Mexico (Hruby 2006:11; Kaneko 2003:76; Silva de la Mora 2018). Researchers have speculated that obsidian reached exchange hubs in the lowlands as preformed blade cores (Braswell and Glascock 2007; Hruby 2006:130; Kovacevich 2006). Piedras Negras, however, was not such a hub (Hruby 2006). While we have found production debitage in the marketplace of the S-sector, the few cores recovered were reduced to the absolute minimum necessary for blade production, and there is no evidence of cortex bearing first series blades.

Yet excavations at the small palace and residential complex of Budsilha 10 km west of the Piedras Negras revealed an obsidian workshop, where excavations of a single building and surrounding patio space have yielded more obsidian than has been excavated in 17 field seasons at Piedras Negras. The Budsilha sample includes nearly all stages of blade production, and it seems evident that high quality prepared core preforms were imported to Budsilha where expert blade makers produced tools with nearly uniform blade dimensions during all stages of reduction (Golden et al. 2020). The sheer number of obsidian tools found (more than 3,000 pieces of debitage, more than 400 unifacial and bifacial tools, and 23 complete—and many more fragmentary—polyhedral cores) indicates that, although lithic producers at Budsilha were major regional producers, they were unlikely the sole consumers of these objects (Aoyama 1999:115; Clark 1986:39).

We have argued elsewhere that elites such as the nobles who administered hinterland centers like Budsilha maintained the interpersonal long-distance connections and sponsored the trade expeditions that fostered the flow of goods to their households (Golden et al. 2020). Raw or partially processed materials were worked into finished products by expert artisans under the watchful eye of elites and then exchanged through regional markets (Inomata 2001; Inomata and Triadan 2000; Kovacevich 2007; Masson and Peraza Lope 2014). Obsidian primarily entered cycles of use at Piedras

Negras already in the form of blades or in the form of much-reduced obsidian cores from outlying production centers, including Budsilha (Golden et al. 2020; Hruby 2006; Roche Recinos 2017). If such a model holds, then intra- and interpolity relationships had to be negotiated between ruler, courtiers, and hinterland elites to maintain the flow of desired materials into the dynastic center.

The Monumental Landscapes of Piedras Negras

Our argument is thus simple: bodily experience and political practice impacted the friction and flow of goods and people across the landscape. This experience and variable friction had archaeological correlates and was encoded and shaped in no small part by representational art and text at dynastic capitals. We begin with Piedras Negras, constrained as it was by limited feasible routes into and out of the dynastic capital (see Plate 11.3). The rulers of Piedras Negras found themselves and their access to the flow of trade threatened in the mid-seventh century, when the dynasty of Palenque was engaged in military conflict with regional neighbors and the hegemonic power of more distant Calakmul to control the major routes through the lower Usumacinta River and San Pedro Mártir River valleys. Instability in that region and alliances with Palenque at the expense of Piedras Negras could easily have closed off important routes up and down the San Pedro and overland across to southeastern Tabasco.

Moral Reforma, a site on a major portage around a series of cascades on the San Pedro River, provides a particularly evocative glimpse of this contest. The text on Moral Reforma Stela 4 records the sequential accessions and reaccessions of that site's ruler. He rose first as an independent power in 661 CE, was removed and re-acceded in 662 CE under the supervision of Yuknoom Ch'een II of Calakmul, then was removed and acceded yet again in 690 CE under the auspices of K'inich Kan B'alam II of Palenque (Martin 2003; Martin and Grube 2008:170).

Given such upheaval on a critical trade node, Piedras Negras chose to ally itself it with the rulers of Calakmul as a buffer against the dynasts of Palenque. From Piedras Negras Stela 35 we learn that just days after participating in a ritual with a Calakmul lord, Itzam K'an Ahk III ("Ruler 2") waged war on the kingdom centered on Santa Elena, Tabasco, just upriver from Moral Reforma (Figure 11.1; Grube 1996:8). A later inscription from 685 CE tells us that Itzam K'an Ahk continued this relationship and undertook rituals supervised by a Calakmul lord (Martin and Grube 2008:144).

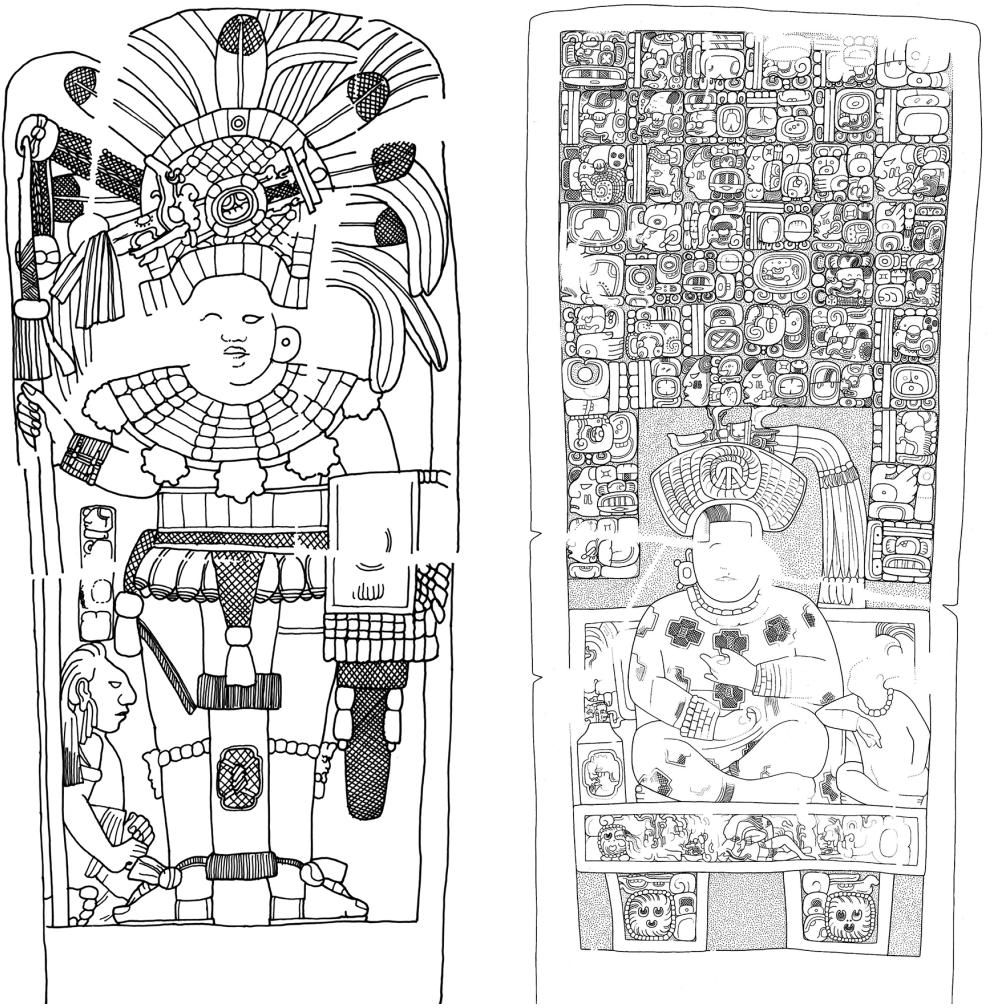


Figure 11.1. *Left*, Piedras Negras Stela 35, showing captive from Santa Elena at bottom left (drawing by Linda Schele, copyright FAMSI). *Right*, Piedras Negras Stela 3 showing Ix Winikhaab Ajaw, queen of Piedras Negras and a princess from Namaan (drawing by David Stuart © President and Fellows of Harvard College, Peabody Museum of Archaeology and Ethnology, PM2004.15.6.19.8).

Even as the monuments of Piedras Negras focused on the struggle to keep open land and river routes to the north, overland routes to the east were also a source of concern. Just east across the steep peaks of the Sierra del Lacandón, the mountains give way to rolling terrain and smaller kingdoms, including Hix Witz, centered on the sites of El Pajaral and Zapote Bobal. Hix Witz straddled key east–west positions on routes to and from the central Petén, the north–south economic and political network of Calakmul (Breuil-Martínez et al. 2004; Canuto and Barrientos 2013; Fitzsimmons 2012; Stuart 2003, 2007, 2012c). Thus, Piedras Negras Panel 7 from 677 CE presents us with the image of courtiers from Hix Witz paying homage to Itzam K'an Ahk III and his wife, herself a princess of Hix Witz (Martin and Grube 2008). More than a representation of a beloved spouse and noble allies, Panel 7 expresses open movement across the landscape.

To the south, Itzam K'an Ahk also staked a claim to free passage through the major river routes of the region. On Panel 2 (AD 667) the Piedras Negras ruler is shown standing before kneeling young noblemen from Bonampak and Lacanha, marking the Lacanha River valley to the southwest and Yaxchilan on the mainstream of the Usumacinta itself (Martin and Grube 2008). Panel 12 (discussed above) and Panel 2 thus crafted an image and experience of dominance over the major river routes important to Piedras Negras. The forthrightness of this imagery stands in marked contrast to the more muted claims made on Stela 35 or Panel 7 for control of the San Pedro River or passages into the Petén, where Calakmul and other hegemonic powers constrained the power of Piedras Negras.

Old and nearing death, Itzam K'an Ahk secured the engagement of his son K'inich Yonahl Ahk to Ix Winikhaab Ajaw, a princess of the Namaan dynasty (Martin and Grube 2008:145; Stuart 1985). The Namaan kingdom was centered on the archaeological site of La Florida, positioned just across the Sierra del Lacandón where the San Pedro River moves onto the Tabasco floodplain. The life history of Ix Winikhaab Ajaw, her marriage in 686 CE, and the birth of her daughter form the visual and textual narrative on one side of Piedras Negras Stela 3 and implicitly lay claim to free passage down the watery highway of the San Pedro.

Thus, spread across the monuments of Itzam K'an Ahk and his son we have a glimpse of the fraught landscape that the dynasty of Piedras Negras navigated. To the north and east, the political contests between Calakmul, Palenque, and other regional powers frequently threatened the few routes across the Sierra del Lacandón that permitted access to the markets and resources of Tabasco and the central Petén. To the south and west, Yaxchilan

and neighboring kingdoms sat on the broad valleys and tributary rivers of routes to important commodities such as obsidian, salt (Woodfill et al. 2015) from the highlands, and perhaps crops like annatto, vanilla, and cacao from the Lacantún and Pasión Rivers (Caso Barrera and Aliphat Fernández 2006a, 2012). The monuments of Piedras Negras thus participated in the instantiation and experience of a landscape in which warfare, détente, and alliances reduced friction of movement.

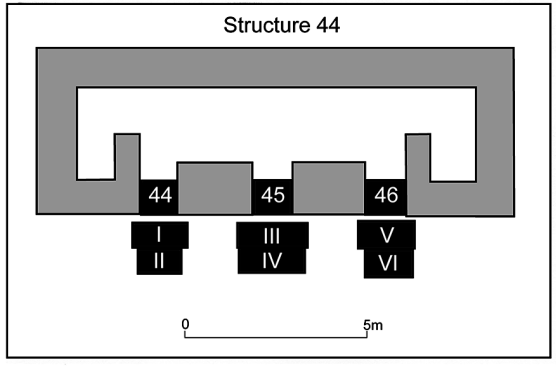
Yaxchilan Structure 44

At Yaxchilan, the narrative and expression of landscape literally frames movement through the city's architecture and reflects distinct local concerns about friction and control of bodies and trade. Structure 44 presents a particularly clear statement of these concerns (Figure 11.2). Over the central doorway we can see efforts by the rulers of Yaxchilan to reimagine the landscape shared with Piedras Negras and re-present it through the crafting of captive bodies carved in stone on truly innovative monuments. On the lintels of Structure 44 we see (for the first time in Maya art) the ruler presented not as a staid immobile figure but rather as a vital warrior in the act of taking captives (Miller 1993, 1998; Tate 1992).

Importantly, the landscape evoked by building and image is spatial and temporal. Over the central doorway, Lintel 45 depicts Itzamnaaj Bahlam III in 681, prior to his accession and some five years before the marriage of K'inich Yonahl Ahk of Piedras Negras to Ix Winikhaab Ajaw of Namaan. Kneeling before Itzamnaaj Bahlam cowers Aj Nik, an otherwise minor lord from Namaan. Despite the seemingly mundane status of the captive, Itzamnaaj Bahlam went on to use the epithet "Master of Aj Nik" on 32 distinct textual references. Why was Aj Nik so important? Because he was a representation of the landscape and metonymic for the landscape that had defined the alliances forged by Itzam K'an Ahk. In taking Aj Nik, Itzamnaaj Bahlam not only lashed out at the alliances of his nominally more powerful neighbors at Piedras Negras, but he also laid claim to movement across the spaces that constituted critical routes of travel and trade for Piedras Negras.

Unfortunately, we cannot pinpoint the origins of captives depicted on the other lintels from the building. However, the most parsimonious explanation is that they represent sites of strategic importance to movement across the landscape, and their capture and representation was an act to constrain the landscape of Piedras Negras.

Thus, the representation of captives on the lintels of Structure 44 mark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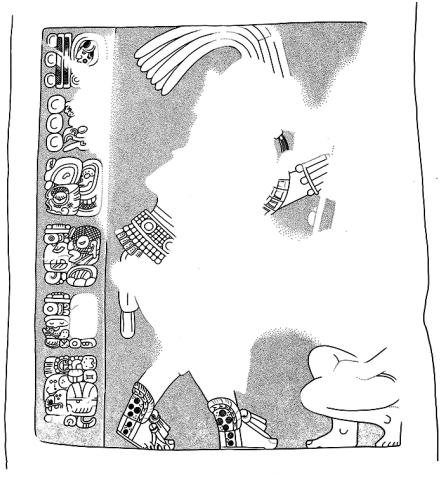

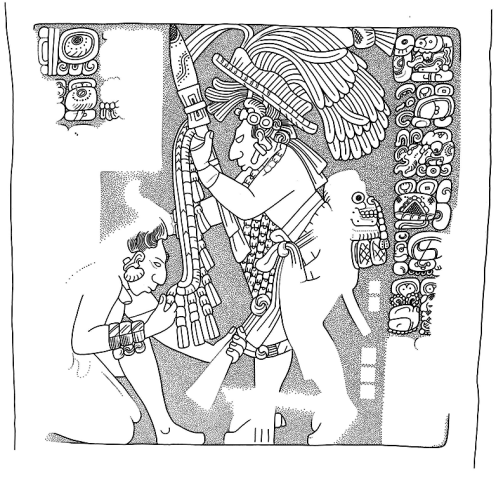

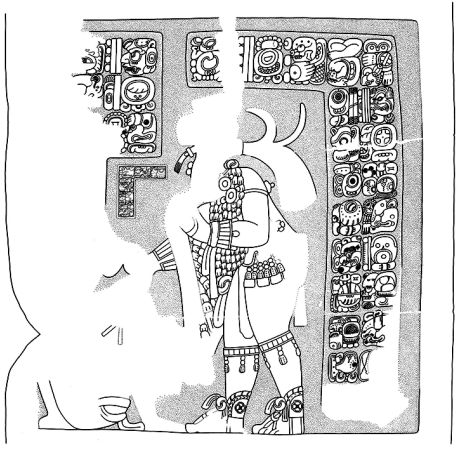

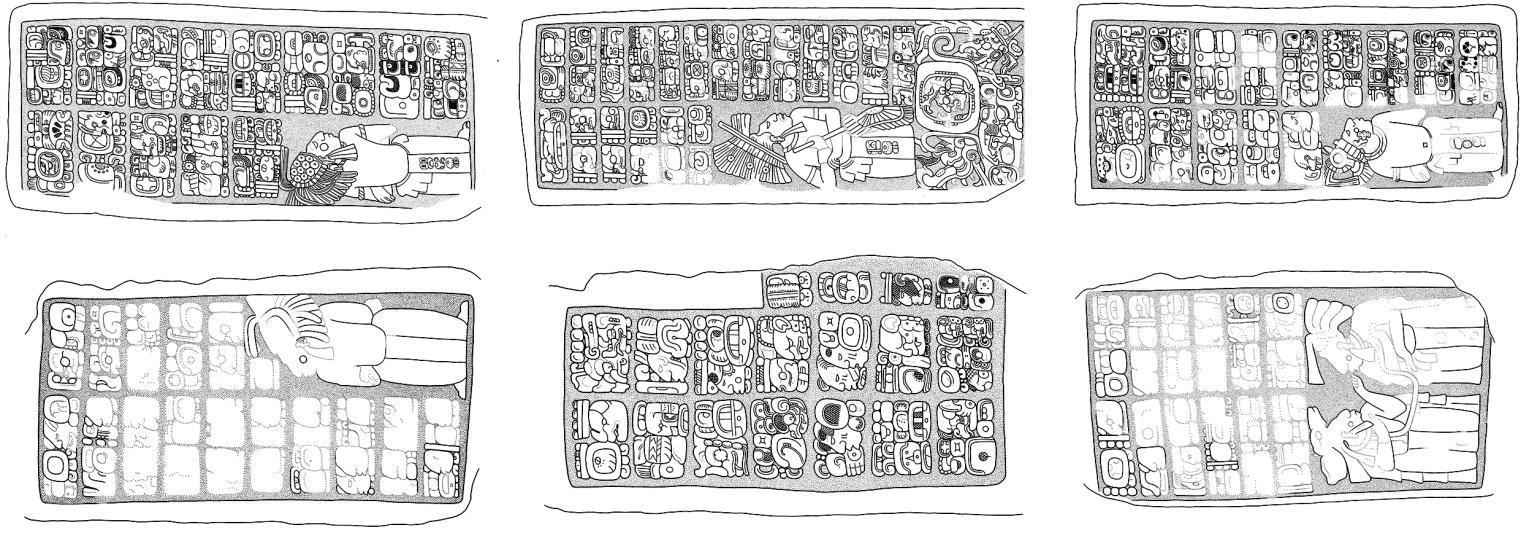

Figure 11.2. Monuments from Structure 44 at Yaxchilan, Mexico (drawings by Ian Graham © President and Fellows of Harvard College, Peabody Museum of Archaeology and Ethnology, PM2004.15.6.6.15, PM2004.15.6.6.16, PM2004.15.6.6.18, PM2004.15.6.7.29, PM2004.15.6.7.31, PM2004.15.6.7.32, PM2004.15.6.7.33, PM2004.15.6.7.34, PM2004.15.6.7.36).

the actions of Itzamnaaj Bahlam as something fundamentally new. This was a political order to overturn the claims of the lords of Piedras Negras, redraw the political map, and shape the experience of landscape. In the staircase that fronts Structure 44, however, Itzamnaaj Bahlam's artists and scribes were careful to couch the renewed vigor of the dynasty in a deeper historical landscape. Thus, on the staircase risers we have a captive from Lacanha (claimed by Piedras Negras as a subordinate on Panel 2) named Aj Popol Chay taken in 729 CE, yet the text juxtaposes contemporary events with the capture of a Lacanha lord by an earlier Yaxchilan ruler in 565 CE. On another tread, a lord from Hix Witz—the kingdom whose princess had married Itzam K'an Ahk of Piedras Negras—is taken captive by Itzamnaaj Bahlam in 732 CE, an event paired with a capture in 647 CE of a Hix Witz lord by Itzamnaaj Bahlam's father. A third stair names a captive from Namaan, the dynasty that had provided a wife for K'inich Yonahl Ahk.

Thus, climbing the risers of this staircase was to travel across time and space and engage with an embodied landscape represented by the captives inscribed thereon. As in other structures at Yaxchilan, circulation through and circumambulation of Structure 44 created place and landscape (O'Neil 2011), but a landscape that fundamentally inverted the realm Itzam K'an Ahk of Piedras Negras had worked to inscribe.

Yaxchilan Structure 21

Yaxchilan Structure 21 presents us with the landscape crafted by Itzamnaaj Bahlam's son and successor, Yaxun Bahlam IV (Bird Jaguar IV; Figure 11.3). At the rear of the central room stands Stela 35 (741 CE), with the image of Lady Ik Skull, mother of Yaxun Bahlam. Lady Ik Skull was a queen of Yaxchilan and a princess of Calakmul. Her significance in this setting is that of both royal parent and synecdoche for Calakmul itself, the kingdom that had been allied with Piedras Negras during its conflicts in the San Pedro River basin (Martin and Grube 2008). Emplaced in Structure 21, the claim of Yaxun Bahlam's family linkages to Calakmul drew a line across the landscape and around the former connections of Piedras Negras. That Lady Ik Skull may have been interred in Structure 21 (Hernández and Márquez 2006:141–142) reinforces the connection between person and place.

The claims over the landscape encircling Piedras Negras begin at the entrance to Structure 21. There are three doorways opening onto the central room space housing Stela 35. Over the southeastern door is an image of Lady Wak Tuun on Lintel 15 (ca. 755 CE), wife of Yaxun Bahlam and a

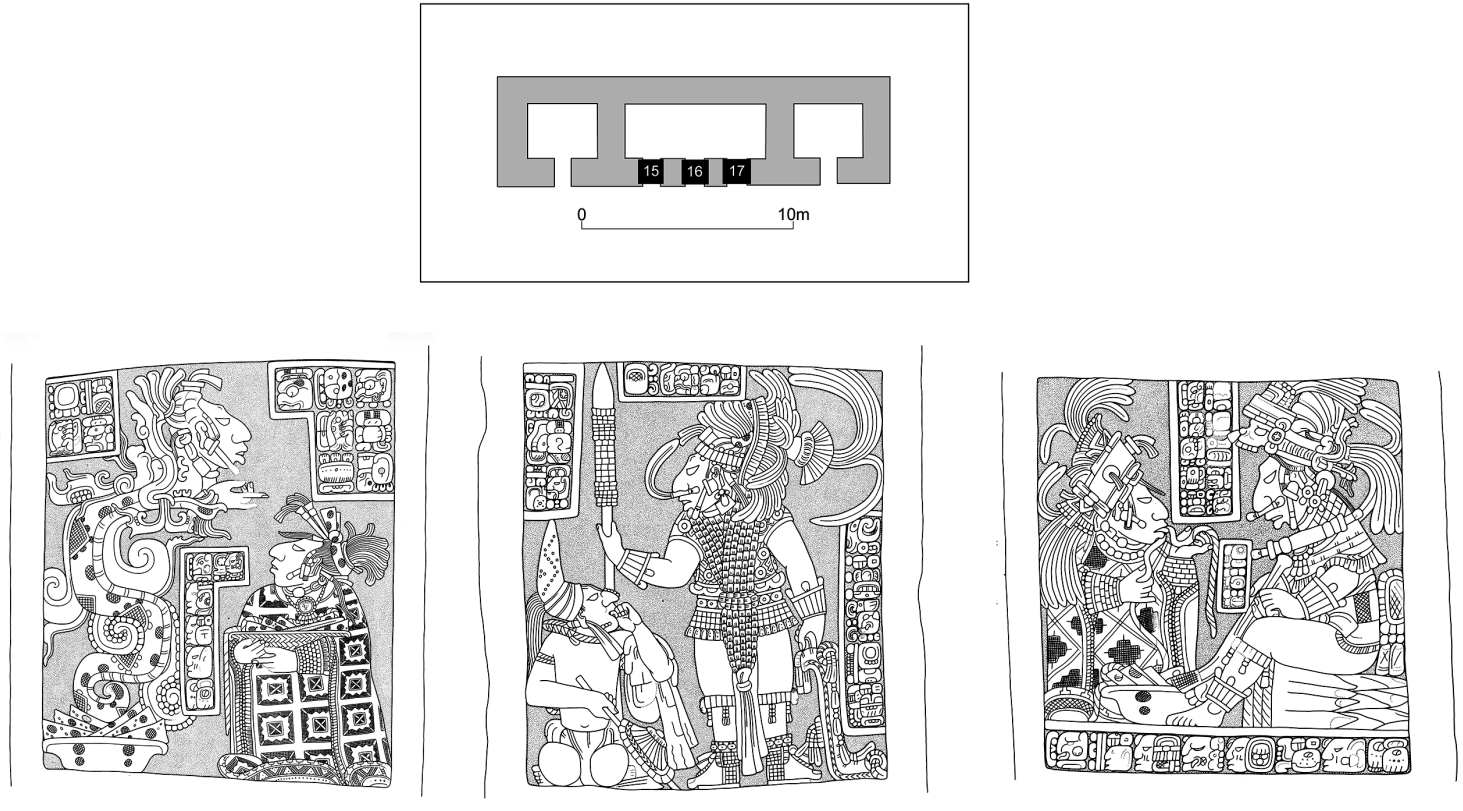

Figure 11.3. Monuments from Structure 21 at Yaxchilan, Mexico (drawings by Ian Graham © President and Fellows of Harvard College, Peabody Museum of Archaeology and Ethnology, PM2004.15.6.5.14, PM2004.15.6.5.15, PM2004.15.6.5.16).

princess of the Ik' polity, shown in the aftermath of bloodletting engaged with an otherworldly vision. As a lady of the Ik' polity, she likely comes from the shores of Petén Itza and a dynasty that had previously forged marriage alliances with the rulers of Piedras Negras.

Over the northwestern doorway is the contemporary Lintel 17, with Lady Mut Bahlam of Hix Witz and her husband, Yaxun Bahlam, engaged in autosacrifice. Here again we see a Yaxchilan queen whose origins lie in a dynasty that had once given wives in alliance with the rulers of Piedras Negras. It is no coincidence that pulled from the tomb of Ruler 4 at Piedras Negras, where it had been placed around 757 CE, is a pyrite disk inscribed with the severed head of a lord of Hix Witz (Escobedo 2004). Thus, even as Yaxchilan developed its alliances with Hix Witz, the relationship of Piedras Negras and Hix Witz deteriorated into violent conflict.

Finally, over the central doorway of Structure 21 is Lintel 16 (752 CE), where Yaxun Bahlam stands with lance in hand over the cowering figure of a captive noble from the kingdom of Santa Elena. Here Yaxchilan takes on the old antagonists of Piedras Negras at Santa Elena nearly a century after the conflict recorded on Piedras Negras Stela 35. If the battle that resulted in the captive shown on Lintel 16 took place anywhere near Santa Elena itself, it means that the forces of Yaxchilan were launched more than 80 km across the territories of multiple kingdoms, skirting the edges of Piedras Negras. It seems likely that alliances with Hix Wits facilitated such actions.

The overarching theme in Structure 21, as in Structure 44, is transformation and control of bodies and movement across the landscape that had once been that of the Piedras Negras kingdom. Those privileged bodies able to pass under the doorways of Structure 21 would have clearly understood the intended message. While this must have been a highly restricted elite audience, it also included the nobles and warriors likely to engage the landscape on behalf of the dynasty.

One can go from building to building, monument to monument at Yaxchilan and see these same patterns played out. The frequent claims of Yaxun Bahlam IV to being "He of 20 Captives" was not merely a statement of military prowess; it was also a claim to terrestrial power and control over movement over an extensive domain. Many more captives must have been taken in battle over the course of the Classic period than those few inscribed on stone. The choices of which captives to depict were political statements not merely of authority over the bodies of individual nobles but of the places on the landscape that they represented.

Conclusions

In summary, then, the representations of lords and ladies, allies and captives carved on lintels, stairs, and stelae at Yaxchilan and Piedras Negras are truly monumental landscapes. These noble and royal bodies so closely tied to their places of origin acted together to help the rulers of these kingdoms lay claims to the narrow tracks, broad valleys, and riverine canoe routes of the Usumacinta River valley. To walk among these monuments, their architectural settings, and their depictions of alliances and conflict was to experience in miniature the fluid flow and friction of the landscape writ large.

Hemmed in on all sides, the rulers of Piedras Negras worked through détente, warfare, and marriage to keep open trade and transit routes that linked them into the economic world of the Central Petén, Tabasco Plains, and highlands to the south. The monuments of Piedras Negras reflect this, and the selection of depicted bodies emphasizes attempts to reduce friction. In contrast, many of the monumental sets found in the buildings of Yaxchilan, particularly those after the accession of Itzamnaaj Bahlam III, emphasize claims to the landscape intended to increase friction into and out of Piedras Negras. For lack of space in this chapter, we have provided only a few examples from Piedras Negras and Yaxchilan, yet we argue that these same interpretations can be extended to the great majority of the sculptural corpus from these and other sites in the region.

Acknowledgments

Our thanks to the editors for guiding this volume to completion, to the Middle American Research Institute of Tulane University for hosting the conference that gave rise to this volume, and to Kristin Hettich for her leadership in bringing together this group of scholars. We thank the Instituto Nacional de Antropologia e Historia in Mexico and Instituto de Antropologia e Historia in Guatemala for the permission to conduct the research that led to this publication. This work has been generously supported by the Alphawood Foundation of Chicago, the National Science Foundation (BCS 0406472, 0715463, 1505399, 1505483), the Foundation for the Advancement of Mesoamerican Studies, Inc., the National Geographic Society, Dumbarton Oaks Research Library, H. John Heinz III Charitable Trust, the Kaplan Fund through the World Monuments Fund, the Norman Fund and Jane's Fund at Brandeis University, and Brown University.

12

Monumental Landscapes as Instruments of Radical Economic Change

The Rise and Fall of a Maya Economic Network

ARTHUR A. DEMAREST, BART I. VICTOR, CHLOÉ ANDRIEU, AND PAOLA TORRES

On the eve of the Southern Lowland Classic Maya collapse, there was an extraordinary period in the history of built environments and monumentality in the Southwestern Petén Lowlands and lowland/highland borderlands. There in the late eighth century new forms and uses of monumentality appear not just to legitimate political or religious power but to introduce and operationalize more complex economic practices and strategies and to create a new exchange network with Classic Maya highland centers.

Archaeologists and scholars of strategic management, organizational theory, and economic network theory began a collaboration to address the complexity and rapidity of the economic changes that took place in the late eighth century. Their approaches identify specific elements and mechanisms that can be found in modern, historical, ancient Western, non-Western, and indigenous economies. Their studies can relate shifts in specific elements to changing management and production strategies, the challenges of such changes, the advantages and risks in the formation of new economic partnerships, and the legitimation of new partnerships and practices. This chapter is an initial product of those interdisciplinary collaborations.

The history of the apogees and crises of the Petexbatun and Upper Pasión regions has been revealed by 28 seasons of multidisciplinary projects investigating many sites first in the Middle Pasión River, then the Upper Pasión, and sites to the south in the piedmont and highlands of the Alta Verapaz region (Figure 12.1). That work, the reconstructed culture-history,

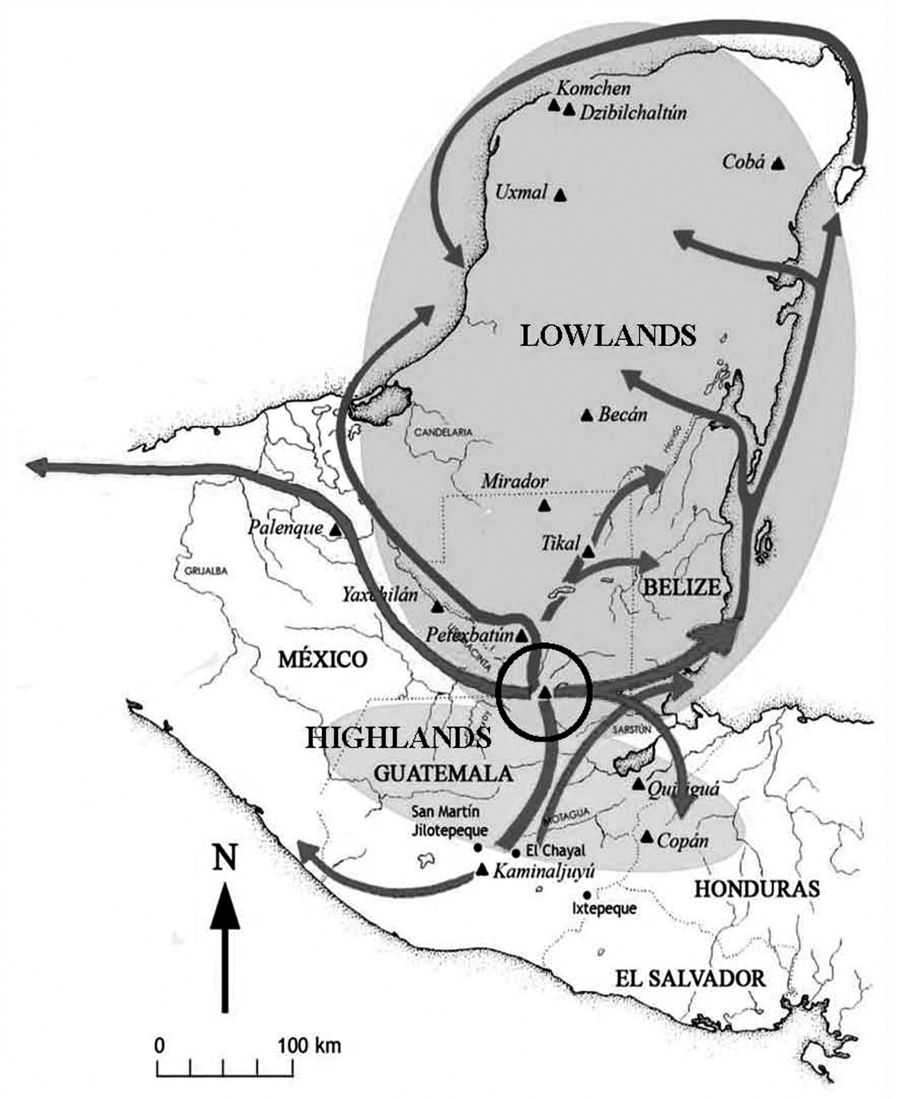

Figure 12.1. Map of the Maya trade routes; note the new southern and transversal routes and nexus at Cancuen.

and implications for the Classic Maya collapse have been presented in many articles, chapters, and monographs (for syntheses, see especially: Barrientos Q. and Demarest 2007, 2012; Demarest 2006, 2012, 2014; Demarest et al. 2008, 2013; Demarest, Quintanilla, and Sausnávar 2016). We provide here only a glimpse of principal changes relevant to new economic networks

and unique uses of monumental landscapes to create and legitimate rapid economic change.

Background: The Meteoric Rise of the Cancuen "Frontier" Kingdom

Prior to 757 CE, Cancuen was a small but strategically important Pasión River outpost and transport center founded by Calakmul during the seventh century interregional wars with the Tikal hegemony (Fahsen and Barrientos Q. 2006; Fahsen et al. 2003; Fahsen and Jackson 2001; Martin and Grube 2008:109). Thus, Calakmul secured control of the Pasión River head of navigation at Cancuen, the beginning of the great Pasión-Usumacinta river route north and west and also the Pasión river-to-land "royal road," as it has been called (e.g., Canuto and Barrientos Q. 2013), to northern Petén centers (see Figure 12.1). Cancuen remained small, growing very slowly from 657 to about 750, since it was still a pawn, first of the Calakmul alliance and then of the militaristic Petexbatun hegemony downriver (Demarest 2006).

The importance of Cancuen to Maya culture-history begins with its 757/760 to 800/810 transformation into a rich kingdom with a new interregional exchange network and innovative economic strategies (e.g., Barrientos Q. and Demarest 2007; Demarest et al. 2014; Demarest et al. 2013, 2015, 2017). Those changes turned Cancuen into an economic juggernaut with a greater scale of transport, mass production, and exchange in obsidian, jade, and other highland commodities than any Southern Lowland Maya center.

We can specifically date and evaluate economic and architectural changes at Cancuen and other sites in the region by using a fine-grained ceramic chronology developed over 28 years of excavations including over 300 domestic middens and typological, modal, compositional, and comparative study of over 600,000 recovered sherds including many imports and distinctive figurines (e.g., Bishop et al. 2005; Demarest, Torres, et al. 2018; Forné et al. 2008; Forné et al. 2011; Sears 2016; Sears and Bishop 2002; Sears et al. 2005; Torres et al. 2013; Torres et al. 2017; Torres, Saravia Orantes et al. 2016) and then aligned with historical dates and a six-stage palace construction sequence with textual dedication dates (Barrientos Q. 2014:683–789). Viewed with this high-resolution lens, the eighth century in the Southern Lowlands looks very different from many current interpretations.

A Feedback Cycle of Rapid Economic Change and Monumental Legitimation

To understand Cancuen's diverse uses of monumentality, we should first review the rapid changes in economy during the 757–800/810 CE period, including the following:

- A shift in economic strategy from transport to transport and production.
- Management decisions to use a well-known strategy of vertical integration, incorporating value-adding production processes prior to export of materials (e.g., Demarest, Andrieu, et al. 2016) that had initially been undifferentiated commodities creating greater exchange value (e.g., Arrow 1975:397–425; Harrigan 1985:397–425; Porter 1998).
- A shift to mass production of obsidian blades and jade preforms (e.g., Andrieu et al. 2014; Demarest, Andrieu et al. 2014; Urquizú and Torres 2013).
- Elite control of ports and workshops, Cancuen's key economic assets (Andrieu et al. 2014; Demarest, Andrieu et al. 2014)
- Supervision of production and exchange by elite entities, as indicated by architecture placement, style, and imagery and the counterintuitive (but actually typical) pattern of massive production and export but local scarcity—in this case of obsidian outside of the epicenter (Demarest, Andrieu et al. 2014; Saravia 2017a; Urquizú and Torres 2013) and of jade in all Cancuen contexts (Andrieu et al. 2014) including epicenter elite burials. Such artifact distributions usually correspond to neither state domination nor some form of open market but rather to control by family or corporate enterprises of resource extraction or early production stages for export (e.g., Arrow 1975; Demarest 2012; Demarest, Andrieu, et al. 2014; McAnany 2013:242–243; Williamson 1971).
- The creation of a much more complex economy is indicated by the increased number of agents and nodes in the system and wider distribution of "social benefit," but only to nobles, the latter probably administrators or merchants (Demarest 2012; Demarest, Andrieu, et al. 2014; Demarest, Torres, et al. 2016; McAnany 2010). Similar patterns of the rise of noble elites can be found at other sites (e.g.,

Chase and Chase 1992; Fash et al. 2004; Palka 1995; Webster and Inomata 2004).

- Driving this change was the development of a new interregional exchange network (Figure 12.2e), with new, non-Classic Maya partners (e.g., Demarest et al. 2013, 2017; Demarest, Torres, et al. 2018; Ortiz et al. 2018).

Parallel to these economic changes, a feedback cycle began between more economic complexity, larger exchange networks, and more diverse and impressive monumental landscapes. That cycle resulted in an enormous, complex, administrative royal palace with dozens of *audiencias* (i.e., "offices") of subroyal nobles, three different types of ball courts, a system of hill/cave shrines, constructions at its ports, a ritual water system of stone channels and pools, and many stelae, altars (Plate 12.1), panels (Plate 12.2), and stucco sculptures (Plate 12.3). These changes in economy and partnerships also led to transformations and apogees at partner sites in the piedmont and highlands to the south and their own innovative uses of monumental landscapes.

New Networks, New Partners, and New Risks

Economic innovation at Cancuen itself would have been stimulated by new relationships with regions of more complex economies or just very different economies and economic ideologies. The new interregional exchange network required recruitment of partners beyond the Southern Lowlands and legitimation and maintenance of those exchange relationships. Given great ideological and political differences between network sites and zones, legitimation needed more variety and complexity for strategically targeted uses of monumentality.

Contemporary economic network theory can help elucidate those changes and the gains and risks of innovative partnerships. Network analyses proved useful for research designs in another "border" zone, the southeastern region of Classic Maya and Honduran centers (e.g., Schortman and Urban 2011, 2012), since they make no prior assumptions about dominance as in other approaches. It makes us seek specificity about products, directions, contexts, and especially agents involved in exchange, rather than relations between hypothetical collective entities such as exchange between "Copan" and "Honduran centers" (Knox et al. 2006; Schortman and Urban 2011).

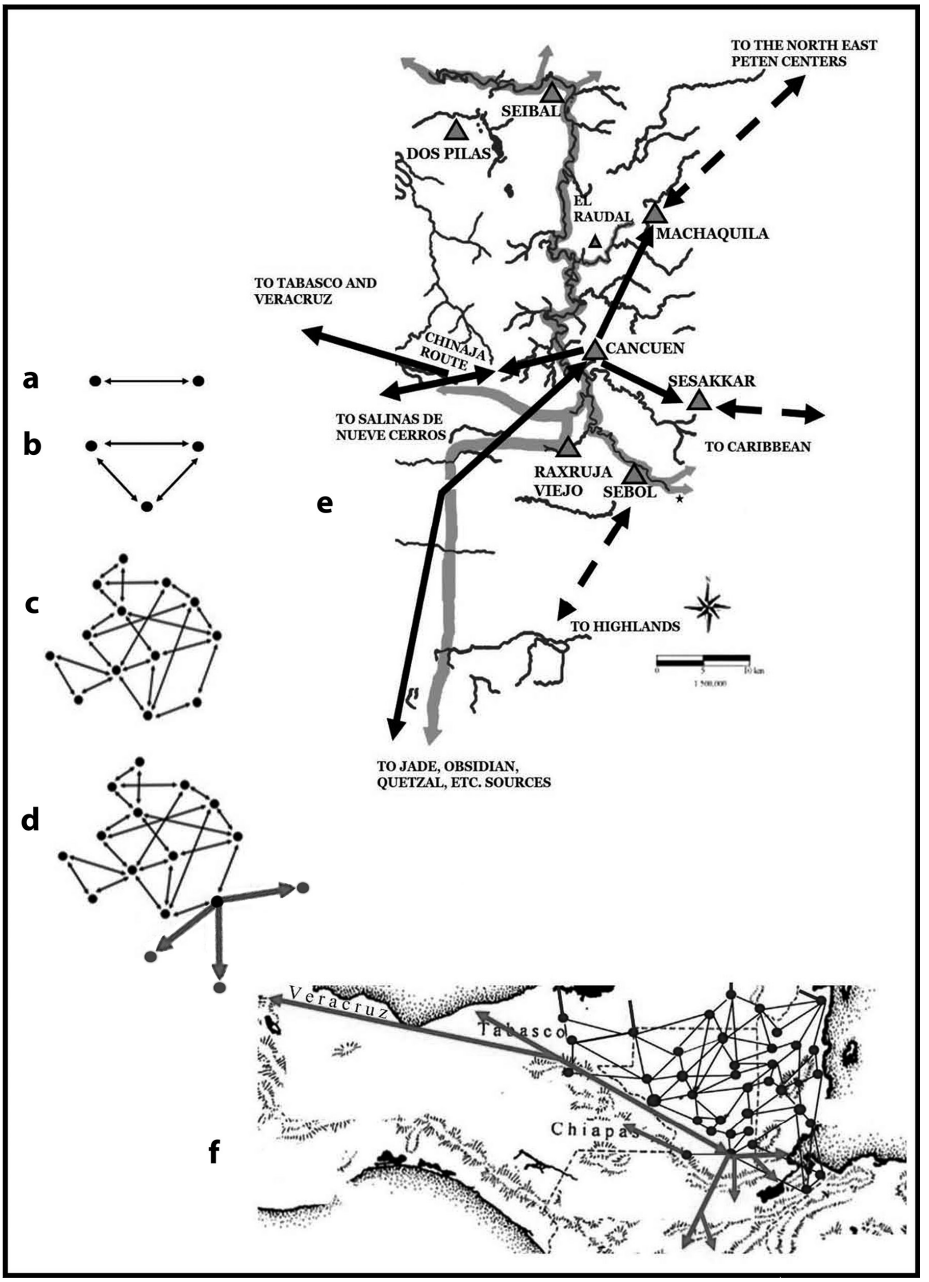

Figure 12.2. Network forms of Cancuen and the southeast centers: (*a*) dyadic network or partnership; (*b*) triadic network; (*c*) community network; (*d*) breakaway formation of new dyadic partnerships; (*e*) some of the trade routes discovered in the southwestern region; (*f*) schematic of Cancuen and southwestern area innovation networks into the transversal and highlands, to the Caribbean, and to the Gulf of Mexico.

Plate 12.1. Panel 3 from the Cancuen Royal Ballcourt.

Plate 12.2. Altar 2 from the Cancuen Royal Ballcourt.

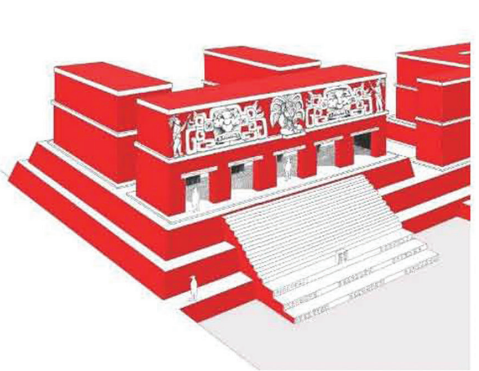

Plate 12.3. Stucco portrait sculptures above palace "*audiencia*" chambers and some nobles' residences.

A common objection to some of the approaches used here is that notion that archaeologists or ethnographers should not use "capitalist" or "modern" concepts. However, we contend that identifications of "types" or "stages" of economies are as archaic as the evolutionist "stages" of societies used from Lewis Henry Morgan into the 1950s. The focus now is on specific relative elements in polythetic sets that combine in various ways to form economies. The presence or absence of such elements should be determined empirically since many of those (not all) are found in the different so-called types of Western and non-Western societies, "modern" and "ancient," "capitalist," "indigenous," and so on (see Demarest et al. [2020] for a more extensive discussion of relativist polythetic thinking in current applied economics).

Another objection could be to the use of network analysis since we usually do not have the level of detail and precision of dating needed to apply network paradigms. However, network models are useful for research designs precisely because they can indicate what information we have and what we lack (Kilduff and Brass 2010; Schortman and Urban 2011:31, 42–43). Furthermore, it is the *structure* of a network model that provides insights for interpretation of data patterns (e.g., Knox et al. 2006; McIntyre and Srinivasan 2017; Podolny and Page 1998). Also, in this case, we actually *do* have the precision of dating sufficient for specific network applications and to sequence the economic changes.

Network studies applied here model opportunities and obstacles to changing practices in the formation of new partnerships due to differing economic ethics or management "cultures." Some types of networks are innovative, initiating dyadic relationships (Figure 12.2a) between just two new partners (e.g., Davis 2016; Larson 1992; Sytch and Tatarynowicz 2014). Such dyadic—or, subsequently—triadic (Figure 12.2b), economic partnerships are characteristic of initial formation of a more stable multipartner "community network" (Figure 12.2c).

The term "community network" does not imply that they have no exchange with outside agents or economies. Rather, it is a relative descriptor indicating that a great majority of major economic collaborations or exchanges occur *within* that network and that an "economic culture" of norms and trust has developed between agents in that network (e.g., Davis 2016; Doz 1996; Friedland and Alford 1991; Knoke 1993; Oliver 1996; Zucker 1986). Community networks tend to be lower risk since each participant shares multiple partners with others over a long period, which mitigates conflicts (Davis 2016:622–625); creates shared norms, practices,

value equivalencies; and, above all, engenders trust, thus maintaining stability (Das and Teng 1998; Davis 2016; Doz 1996; Gimeno and Woo 1996; Gulati 1995; Hamman and Provan 2000; Sytch et al. 2012). While community network economies are more stable, over time they become less open to addition of new external economic partners (Tatarynowicz et al. 2016). They have slower growth, less innovation, and long-term risks of economic decline (e.g., Granovetter 1985; Gulati 1995; Schrank and Wittford 2011; Tatarynowicz et al. 2016; Uzzi 1996, 1997). Over time, increasing interdependence in the network can also lead to hypercoherence.

New dyadic noncommunity partnerships are often a first step in network formation (Doz 1996; Gulati 1995; Hamman and Provan 2000; Sytch et al. 2012). Dyadic partnerships can also result from later decisions by agents in a mature "community network" to look outside for new nonnetwork partners (Figure 12.2d) for exchange or production activities (Larson 1992; Tatarynowicz et al. 2016). Such new dyadic connections in break-away "innovation networks" exchange not only commodities or products but also ideas on economic practices and organization (Breschi and Malerba 2005; Cowan and Jonard 2004; Tatarynowicz et al. 2016; Whittington et al. 2009). These can bring rapid development, success, and wealth, as exemplified at Cancuen (e.g., Cowan 2005; Cowan and Jonard 2004; Davis 2016; Larson 1992; Lounsbury and Glynn 2001; Sytch et al. 2012; Tatarynowicz et al. 2016). On the downside, new dyadic or open networks carry greater risks (Freeman et al. 1983; Hamman and Provan 2000; Perkins el al. 2014; Sytch and Tatarynowicz 2014; Zaheer et al. 1998) because the ethics or economic cultures may differ between unfamiliar entities and can be problematic and potentially conflictive. Common exchange norms require shared partners and time to build trust (Aldrich and Fiol 1994; Das and Teng 1998; Hamman and Proven 2000; Perkins et al. 2014; Schrank and Whitford 2011; see also see Golden and Scherer 2013 for a parallel emphasis on "trust" in Maya political cohesion).

Again, the above-cited applications of network theories, strategic management interpretations, and institutional analyses are often applied to non-Western, historical, ancient, and indigenous economies since such features have been found to be very useful in addressing the functioning of institutions, agency, and strategies anywhere. Such very specific features are found in all manner of economies in differing contexts and to different degrees (see discussion in Demarest et al. 2020).

There are many historical examples of failed exchange agreements with alien partners. As far back as third millennium BCE Mesopotamia, among

the earliest written records were denunciations about perceived exchange ethics violations (e.g., Kramer 1971). Some of those led to wars between Sumerian "lowland" city-states and Elamite polities in Highland Iran (Potts 2015). Constant trade disputes between aggressive merchants of the rising Venetian innovative network and the older "community" economies of the declining Byzantine Empire led to conflict and the destruction of Constantinople in the Venetian-backed Fourth Crusade (Phillips 2005). Of course, most economic disputes are within community networks, but shared partner mediation and community norms usually mitigate those. The danger of perceived violations is far greater, as are the consequences, between societies in a purely dyadic relationship without a network of shared partners and embedded in different and unfamiliar systems.

Most recently there have been frequent failures in innovative partnerships like those between U.S. or European firms with Chinese or other non-Western corporate or government enterprises. After initial success and gains, many such partnerships collapse into litigious disasters as occurred when Chinese partners of the Lego corporation began to produce "Lepin" children's blocks identical to those of Lego (Bye 2017). Similarly, partners of Range Rover vehicles rolled out the identical Wing-Rover vehicles (Marsden 2014). Again, these resulted from differing economic ethics and limited ability to enforce the established norms and laws of the Western "community network." To mitigate risks, it is necessary to rapidly legitimate and stabilize new exchange partnerships (Das and Teng 1998; Doz 1996; Hamman and Provan 2000; Suchman 1995; Sytch et al. 2012; Zucker 1986).

Cancuen's Legitimation of the New Economic Order Through Strategic Monumental Landscapes

Between 757/760 and 796 the radical changes at Cancuen in import and production activities, their scale, and the rise of the merchant elite created great inequality visible in domestic assemblages (e.g., Gómez Joaquín 2016, 2017; Quintanilla 2014; Torres 2014; Torres, Demarest, et al. 2016). There would have been a need for many more dock workers, rowers, bearers, and agents for land routes and later for jade production and export, as well as constant labor to construct, maintain, and frequently reconstruct new ritual and administrative landscapes described below. Such pressures in a short period might have strained the internal fabric of Cancuen society requiring powerful legitimation for local and subregional acceptance of the new order.

The real challenge, however, would be legitimation of new exchange relationships *outside* of the Maya Lowlands. That required different types of ritual settings to legitimate dyadic relationships with agents from very different societies, each with different ideologies, rituals, and economies.

Cancuen's elites had to look for new routes and partners when the Middle Pasión to the north began to disintegrate after 740 (Demarest 2004, 2006; Eberl 2014; Inomata 2008; O'Mansky and Dunning 2004), reducing the effectivity of the Pasión-Usumacinta river route and its connecting land routes north. Then Cancuen leaders emphasized routes that avoided the troubled Middle Pasión region, as shown in Figure 12.1 (Demarest, Andrieu, et al. 2016; Demarest et al. 2013, 2015). Some exchange was maintained with the north through domination of the Machaquila River route, discussed below.

In general, however, Cancuen elites simply turned away from the less competitive and troubled Classic Maya Southern Lowland economic "community network" and sought new routes (Figure 12.2e, 12.2f) and new exchange relationships (Demarest et al. 2007, 2013, 2018; Ortiz et al. 2018; Torres et al. 2017). In the 760–800/810 period, each addition of a route and partner is seen in its impact on the political economy of both Cancuen and partner sites. Through compositional sourcing of ceramic and lithic imports (e.g., Andrieu and Quiñónez 2010; Andrieu and Forné 2010; Andrieu, Quiñónez, and Rodas 2011; Andrieu, Jaime-Riveron, et al. 2011; Bishop et al. 2005; Forné et al. 2009; Forné et al. 2010; Ortiz et al. 2018; Sears 2016; Sears and Bishop 2002; Sears et al. 2005; Torres, Demarest, et al. 2016; Torres, Saravia Orantes, et al. 2016) linked to a high-resolution chronology, we can correlate changes in economic activities and material culture at Cancuen with new partnerships and construction of new ritual settings. In turn, from that evidence we can correlate the trajectory of this rapidly forming network of dyadic relationships with efforts to hold it together through uses of monumentality.

Raxruja Viejo and the Verapaz Route: New Partners, New Monumental Tools

Raxruja Viejo is strategically located just 17 km south of Cancuen at the intersection between the flat east–west transversal transport corridor and the valley route south through the Verapaz piedmont and highlands (see Figure 12.1) to sources of pyrite, large concentrations of quetzals, the shortest path for transport of El Chayal obsidian and, branching off, to Cancuen's jade

source (Andrieu 2010; Andrieu, Jaime-Riveron, et al. 2011). Despite this strategic location there is no evidence of epicenter architecture at Raxruja before the late eighth century. Rather, there are deposits of Maya Lowland or lowland-style Early Classic ceramics only in the caves in the hills there, confirming that such caves were pilgrimage shrines for lowland merchants (Woodfill 2010; Woodfill and Andrieu 2012).

There was a sudden change in the late eighth century in the zone of Raxruja's steepest karst towers (Plate 12.4). Huge monumental terraces were built at the base of these natural hill temples on which were placed 21 plain stelae; 7 altars, 1 in the distinctive Cancuen truncated-cone style; 2 worked masonry structures; and a highland-style elite complex (Andrieu 2016; Andrieu and Sion 2016; Demarest et al. 2013, 2015; Saravia 2014, 2015, 2017; Saravia and Estrada 2017; Saravia et al. 2015; Sion et al. 2016; Torres et al. 2013). Furthermore, 70% of the ceramic offerings in epicenter caves were Cancuen ceramics, indicating Cancuen elite visits to share rituals. Yet ceramics outside of the caves had only 3% Cancuen diagnostic ceramics (Saravia et al. 2015; Torres et al. 2013). In overall effect, the sacred hill-caves had been altered to resemble Lowland Maya temples with stelae and altars before them and a central plaza between them (Plate 12.4).

Nonetheless, the domestic ceramics in most of the site were local, coarse piedmont styles and pastes (Saravia 2017; Saravia et al. 2015; Torres et al. 2013), and the terraces and elite residence constructions were of typical crude northern Verapaz clay and rough stones. There is little evidence of Cancuen domination, and it is probable that a mutually beneficial dyadic exchange partnership was established between the elites of Cancuen and Raxruja. Raxruja leaders would have also needed powerful legitimation for this radically new economic relationship. The new combination of sacred natural geography and impressive Classic Maya style stela/altar complexes created a "hybrid" monumental sacred setting both for its inhabitants and for cave ritual with Cancuen partners.

Meanwhile, at Cancuen itself we find large quantities of Raxruja and Verapaz ceramics (Saravia et al. 2015; Torres et al. 2013). There was a parallel Cancuen (e.g., Spenard 2006) use of its local karst towers with caves and even a probable reference to a Cancuen royal ritual at these natural shrines (Kistler 2004). Thus, a new dyadic exchange relationship was legitimated for both sides, at Cancuen's caves and at Raxruja, by creating strange but awesome sacred monumental landscapes.

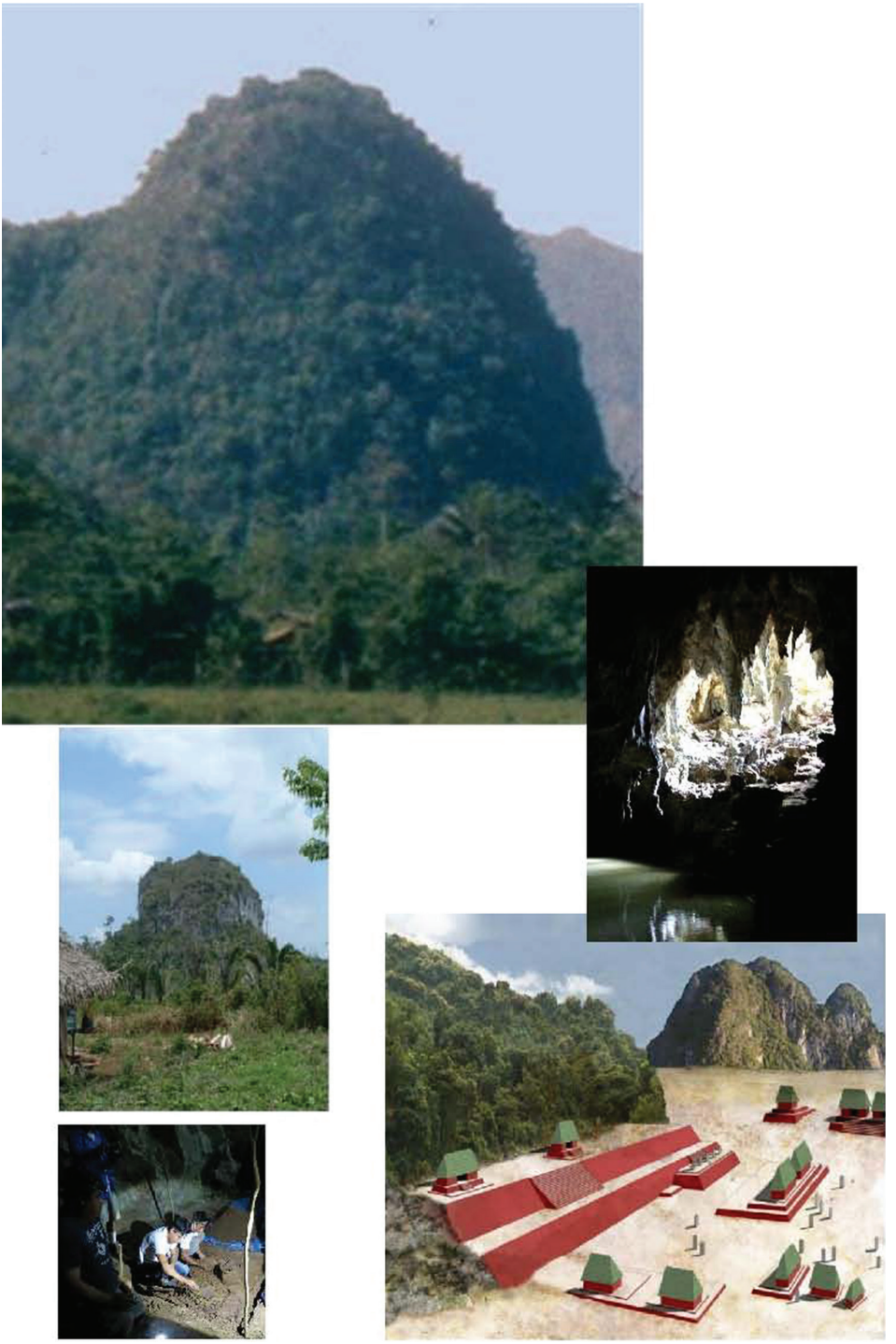

Plate 12.4. Raxruja Viejo sacred karst towers and hills also showing some of the caves in them and an epicenter reconstruction drawing.

Ritual Legitimation of Long-Distance Jade Exchange

The best example of adoption of alien ritual settings is Cancuen's northern ball court (Torres 2010, 2011). Unlike any lowland court, it had the exact form and function as "feasting ball courts" in the zone of the highland jade source for Cancuen's preform workshop (Andrieu 2010; Andrieu and Forné 2010; Andrieu, Jaime-Riveron, et al. 2011; Andrieu et al. 2014).

This sprawling ball court was low and open, thus more public (Figure 12.3a). Its two defining platforms of rough clay and stone, highland-style construction were faced with large inclined unworked stone slabs defining a 24 m playing alley (Torres 2011). It is in all respects a Baja Verapaz or Quiche style "feasting" ball court (Fox 1996; Torres 2011). At Cancuen the feasting is demonstrated by thick sheet middens of broken simple jars, *comales*, and serving vessels surrounding the ball-court platforms. This same zone has the highest proportions of Verapaz ceramics at Cancuen (Torres 2010, 2011; Torres et al. 2013).

All of the above suggests the formation and maintenance of a dyadic relationship with agents from jade extracting highland communities (Andrieu 2010; Andrieu, Jaime-Riveron, et al. 2011; Torres 2011). This new architectural setting at Cancuen itself would serve for ritual activities with visiting exchange partners. The jade arrived at Cancuen in the impractical form of huge boulders (Figure 12.3a, d) weighing up to 18 kg, a jade transport practice not seen anywhere else (Andrieu et al. 2014). Clearly, there was a strong element of ideology in this jade exchange, probably involving pilgrimage and games at Cancuen with its new highland partners. Such settings and activities helped to build trust, but this jade transport could also have been the actual mechanism of a ritual economy (Fash and Fash 2007; Wells and McAnany 2008).

Note that jade boulders arrived at Cancuen with some ritual significance but then were treated at Cancuen like a commodity and only partly worked to enhance value (Andrieu et al. 2014; Demarest, Andrieu, et al. 2016; Harrigan 1985; Porter 1998). The exact "status" of the preform products is difficult to know, but the most pronounced change in jade value was always final carving. Thus, jade at Cancuen alone may have begun as imported "ritual good," then dropped to raw commodity, then changed to sumptuary good, and only later finished as sacred property (Andrieu et al. 2014; contrast Kovacevich 2011). As in the Igor Kopytoff (1988) distinctions (see also Appadurai 1988), the multiple status changes of jade at Cancuen alone

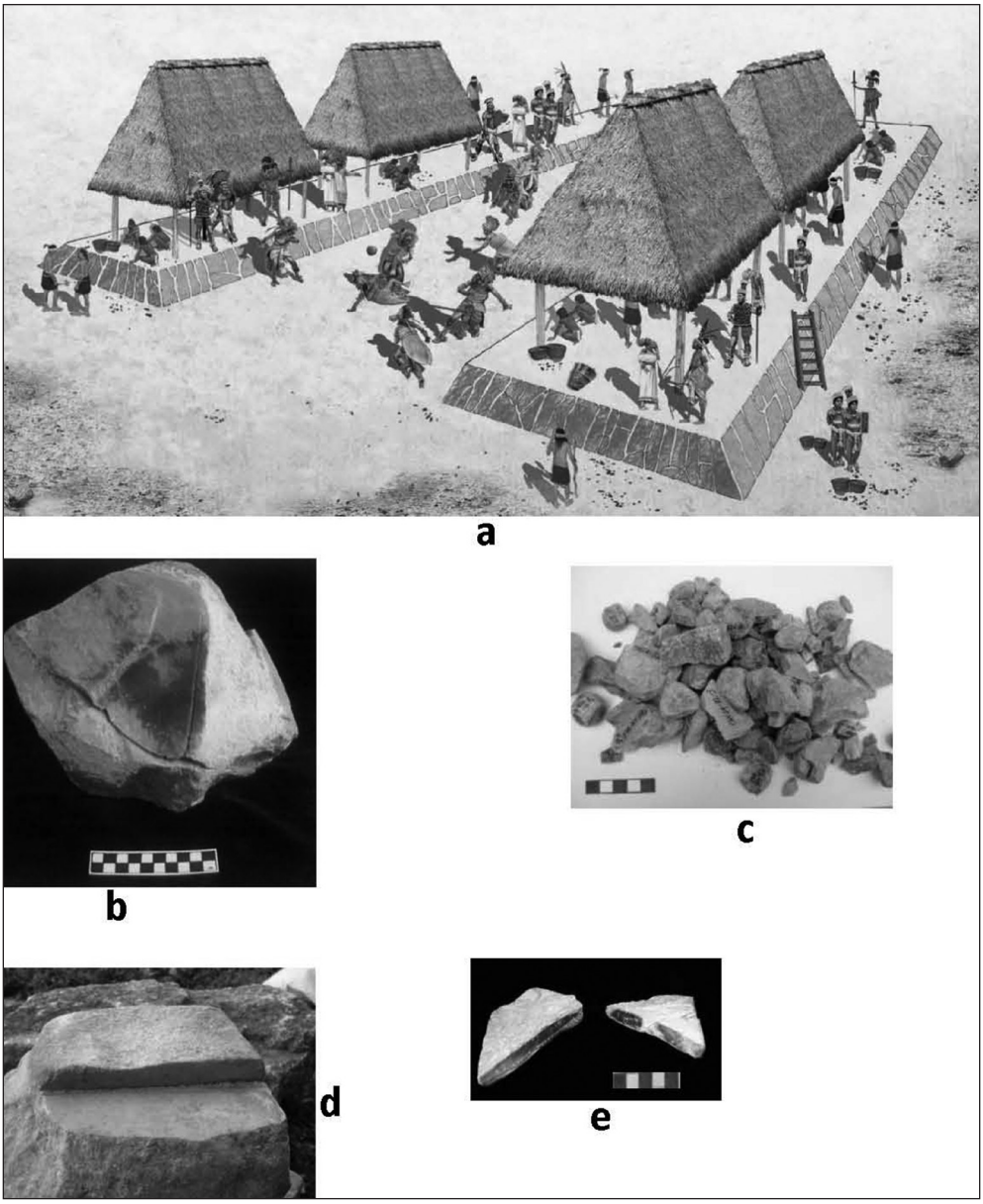

Figure 12.3. The northern highland–style "feasting ball court": (*a*) the ball court; (*b*) one of the large jade boulders with one face cut; (*c*) jade debitage; (*d*) another cut boulder; (*e*) fragments for preforms.

had the same complexities as its Near East equivalent, lapis lazuli, in its production and exchange history (Wright 2013).

These exchange complexities between distant partners with such a high-but protean-value resource would need much negotiation and legitimation—thus the strange presence of this highland ball court at Cancuen and its relationship between architecture, ritual, and exchange.

Legitimation of the Northeast Petén Exchange on the Remaining River Route

Other monumental ritual settings at Cancuen helped to sustain a reduced level of exchange with Petén Classic Maya city-states. With endemic warfare restricting the Pasión route, the Cancuen elites used another "detour" heading northeast via the Machaquila River valley to reach the northeastern Petén (see Figure 12.1 and 12.2e). While less efficient, requiring many portages, this route avoided the chaos of the Middle Pasión.

Cancuen's political and economic control of the Machaquila detour was not based on mutual agreement and benefit, as with other partners, but on direct dominance. The Machaquila center raised no monuments during Cancuen's 760–800 apogee (Barrientos Q. 2014; Barrientos Q. and Fahsen 2006; Fahsen and Barrientos Q. 2006).

At Cancuen a beautiful ball court with three great altars (Plate 12.1) created a ritual landscape to reaffirm Cancuen control of the Machaquila route. In contrast to the northern ball court, the royal ball court of Taj Chan Ahk was Classic Maya in form and construction (Torres 2011). The giant altars bore imagery indicating the ball court's function as an instrument of alliance formation to control the northeast route. Altar 2 (Plate 12.1) and Panel 3 (Plate 12.2) refer to Cancuen's control of Machaquila. Altar 2 celebrates an allied lord's proxy war and victory over Machaquila to reassert Cancuen's control (Barrientos Q. and Fahsen 2006; Fahsen and Barrientos Q. 2006). On all monuments, Cancuen rulers are titled "Holy Lord of Cancuen, Holy Lord of Machaquila." Symbols and glyphs in its sculptured stucco facades (Fernández Aguilar 2010) identify the ruler as water-lord and master of the river (see Plate 12.2). While its size and form would have limited the audience to high elites, the court was perched on the top of the natural 30 m high escarpment directly above the river, and its presence and river associations would have been visible to all.

The Transversal Route East and the "Center in the Sky" at Sesakkar

Cancuen had a different dyadic exchange connection on the transversal route east (see Figures 12.1 and 12.2e). There the epicenter of Sesakkar combined sacred geography of hill worship with Petén-style monumentality. This bizarre site was built on the tops of very steep, closely spaced, natural karst towers (Demarest et al. 2015; Saravia 2015; Torres et al. 2017). Its small, Classic Maya–style palace faced an impressive plaza with 23 stelae with rich lithic offerings below them (Figure 12.4). One of the eroded stelae still had some glyphs. Another was in the unique Cancuen style with a trapezoidal or "notched" projecting top (Saravia 2015).

It is unusual that the epicenter constructions were only on the tops of steep hills, which were made level by massive earth-moving and construction of wide stone terraces (Torres et al. 2017). Thus, while they appear close in Figure 12.4, the palace is atop one karst tower and the central plaza with monuments is atop another. Moving between them required climbing 40 m down this steep hill with the palace and then up 40 m to reach the central plaza on the adjacent one.

Sesakkar is lowland Classic Maya in some features, and its ceramics are a mix of southeastern Petén and rough piedmont styles and pastes with some imported Cancuen ceramics and a Cancuen-style stela (Saravia 2017b; Torres et al. 2017). The artifactual and monumental patterns show an exchange relationship with Cancuen but once again only a dyadic connection only with Cancuen.

The Exchange Route to the Gulf Coast and Initial Glimpses of Its Monumental Legitimation

Cancuen subprojects (Demarest et al. 2017) continue annually to explore, discover, and investigate new routes and sites in the southwest (Figures 12.1 and 12.2e, f). In 2017 we began investigations of a region (Demarest et al. 2017) that runs west along the base of the Sierra de Chinaja to Chiapas and toward the Gulf coast of Mexico (Demarest, Andrieu, et al. 2018; Demarest et al. 2017; see Figures 12.1 and 12.2f). Investigations recovered the same "hybrid" pattern with potsherds of Verapaz styles and pastes, with steep karst towers with caves as foci of ritual, but then use of lowland monumentality including a hieroglyphic staircase and stelae. The local nature of material culture again suggests new economic exchange relationships, not conquest, legitimated through forms of monumentality.

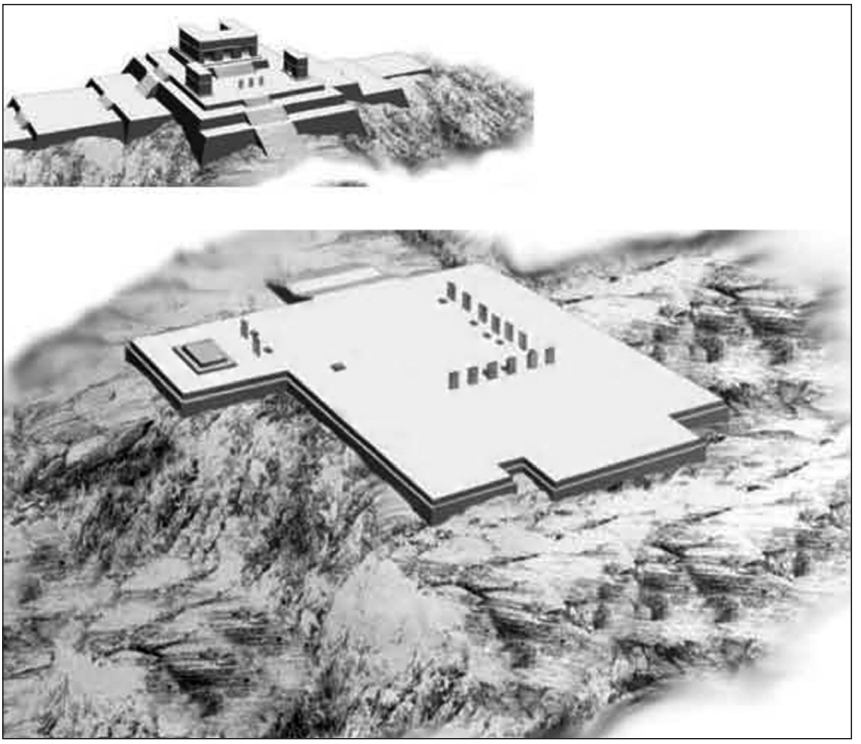

Figure 12.4. Epicenter of Sesekkar showing central plaza with stelae on top of one steep hilltop and the palace facing it from another hilltop.

This route could have led to the source areas of Cancuen's Chablekal Fine Grey ceramics and, later, Campamento Fine Orange from Veracruz and Zaragoza obsidian from Puebla in twice the normal Southern Lowland proportions—all about when its jade preform mass production began (Andrieu and Quiñónez 2010; Andrieu, Quiñónez, and Rodas 2011; Forné et al. 2010; Forné and Torres 2010). This connection to the distant, more complex Gulf coast economies might have stimulated changes in economic practices at Cancuen.

The 760–800 Sequential Transformations of the Cancuen Royal Palace: From Ruler's Residence to Office Complex?

Cancuen's complex (Figure 12.5) has been the subject of articles, book chapters, and monographs (e.g., Barrientos Q. 2014; Barrientos Q. and Demarest 2007, 2012). However, excavations continue in this colossus,

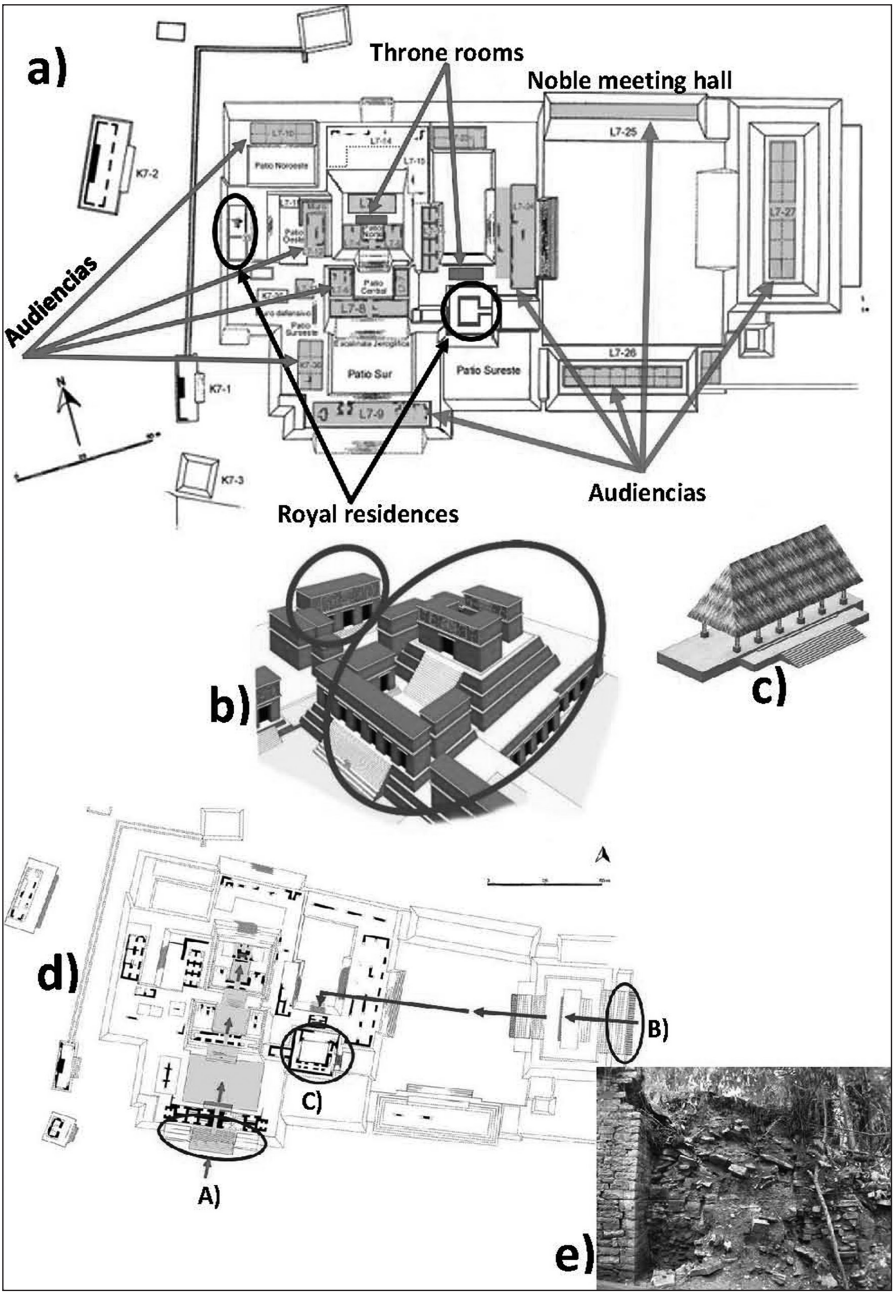

Figure 12.5. The administrative palace of Cancuen: (*a*) plan view of the palace showing the dominance of *audiencias*, offices of the nobles, the only two residences, and the throne *audiencias*; (*b*) the final construction on the inner core of the palace with the principal (western) throne room surrounded by *audiencias* and with the restricted royal residence now pushed to the side; (*c*) nobles meeting hall; (*d*) the palace entrances and procession routes that were buried in tons of rubble in Cancuen's destruction; and (*e*) part of the massive rubble burying one of the palace entrances.

finding more evidence in 2014–2017 of economic uses of its monumentality (Demarest, Andrieu, et al. 2018; Demarest, Torres, et al. 2016). The palace was reconstructed and greatly enlarged six times, with the four largest reconfigurations occurring during the 757–800/810 period (Barrientos Q. 2014:683–785) of the increases in Cancuen's dyadic partnerships. These apogee-period reconstructions made the palace into a hyperbolic example of using monumentality for legitimation (Barrientos Q. and Demarest 2012). However, it also became a very practical setting for day-to-day functioning of the kingdom's economy. By 786 it had an awe-inspiring elite entrance (see Figure 12.5) with a 15 m high stairway leading up to exterior structures of over 6 m in height with 3 m high cornices covered with gigantic stuccos in almost full round relief (Barrientos Q. 2014). Here and at small palaces of nobles, stucco portraits were of different individuals (Plate 12.4) with distinctive features and adornments and not of the king, whose portrait and symbols are found elsewhere (Barrientos Q. 2014:697–714; Fernández Aguilar 2010). The high entrance chambers and dozens more within the palace are not residential. They are very small, about 2 × 3 m to 2.5 × 4 m, and completely open on the side facing out directly above the 15-m high stairway facing viewing areas below (Figure 12.5a).

Comparative studies of the architecture and imagery (Barrientos Q. 2014) concluded that these entrance *audiencias* were chambers of high elites to receive petitioners. Only the most important individuals would have been permitted to enter the palace itself and its series of ever more exclusive plazas and *audiencias*. As you would move through the sequence of courtyards, they became smaller, higher in elevation, and with more textual monuments since fewer individuals could ascend at each stage to the throne room (Barrientos Q. 2014). At one point the highest elites had to ascend a large hieroglyphic stairway. The eastern side of the palace also had sequential but larger, less exclusive plazas leading to a second lower, less impressive throne chamber (Quintanilla and Valle 2011), presumably for the ruler or his son to receive lesser elites (see Figure 12.5a).

Each year excavations in the 10 major palace courtyards have found more *audiencias* (see Figure 12.5), an internal water system (Cambranes and Quintanilla 2013), and, in 2017, a long columned platform (see Figure 12.5c) with no internal rooms (Cajas 2017; Gómez Joaquín and Cajas 2017; Saravia 2017c). Such structures have been interpreted as elite meeting places at some other late-eighth-century sites (e.g., Arnauld 2001; Barrientos Q. 2014) and were common in the Postclassic period. The architectural map of the palace (see Figure 12.5a) shows that it had become a ritualized

office complex, with awe-inspiring stucco sculptures on facades facing outside and, within, monuments with texts for more elite viewers.

The 2014–2017 excavations (see Luin and Tuyuc 2016) uncovered the final palace conversion into an administrative complex at 786 CE when the royal residence itself was moved from its central location by the throne room to a closed courtyard below and off the procession axis of the palace (see Figure 12.5b). *Audiencias* were constructed surrounding the throne room itself. The distribution of power to nobles and the palace conversion to a ritualized mercantile complex was then complete, and the ruler—now primarily legitimizer-in-chief—and his family had literally been pushed to the side. Palace offices and plaza rituals served to secure and administer subregional affairs, and its majestic facades, sculptures, and cleverly ranked pathways could have helped recruit and maintain economic collaborations with any of its diverse range of exchange partners.

Overview: Changing Economics and Changing Architectural Legitimation

Other less spectacular southwestern region examples also demonstrate how architecture and imagery can help form, legitimate, and stabilize new economic partnerships, beneficial to elites on both sides, as evidenced by parallel epicenter apogees at all the new network sites. Yet, in this innovation network, each connection to Cancuen was still a direct dyadic, one-on-one partnership, not a stable network of interacting shared partners. The new monumental ritual landscapes and imported artifacts indicate exchange with Cancuen, but each setting is different from those relating to other partner sites or zones, without evidence for formation of even a triadic network. Thus, the network was still unstable with the risks that accompany external dyadic partnerships.

"Network Failure": Economic Decline and Contract Violation or an Overreach of Legitimation?

As with other ancient and modern examples, the new partnerships brought new resources and economic practices leading to a network apogee for all partners and creation of dazzling complex monumental landscapes. But dyadic innovations and network changes are untested for long-term success, and new partners can prove "unreliable" or even "unethical" from the other's perspective. The need to build trust in innovation networks is the

most difficult challenge (Das and Teng 1998; Doz 1996; Friedland and Alford 1991; Gulati 1995; Hamman and Provan 2000; Sytch et al. 2012; Zaheer et al. 1998; Zucker 1986). Today collaborations with new foreign partners are lauded, but, in fact, these noncommunity partnerships have an unusually high failure rate (Freeman et al. 1983; Perkins et al. 2014; Tatarynowicz et al. 2016).

The fall of Cancuen—by that time almost an economic corporate entity—and the collapse of the entire new southwestern network is a spectacular example of "network failure" since, between 800 and 810 CE, not just Cancuen but the other hybrid highland–lowland sites in the network simultaneously collapsed with the abandonment of both Cancuen and most of its non–Classic Maya economic partner sites (Demarest and Martinez 2010; Demarest, Quintanilla, and Suasnavar 2016; Meyer and Zucker 1989; Schrank and Whitford 2011; Uzzi 1996, 1997).

The proximate and the underlying causes for this network failure were multiple and complex, as detailed elsewhere (e.g., Demarest 2006, 2014; Demarest, Quintanilla, and Suasnavar 2016; Douglas, Demarest, et al. 2016; Fash et al. 2004; Golden and Scherer 2013; O'Mansky and Dunning 2004). Here, however, we emphasize underlying economic structural factors in terms of network vulnerability and use of monumental landscapes as a counterbalance for legitimation.

However, one specific proximate cause could have been damaging to both the southwestern innovation network and the Petén Classic Maya "community network": the internal land and river transport systems became noncompetitive when Gulf coast and Maya merchants shifted long-distance exchange to rely much more on the Gulf and Caribbean coasts. Sea transport was more energy efficient and less politically vulnerable. This shift in routes left the community network of the inland Petén economically marginal at best. Cancuen and the southwest, however, might have been adjusting well to the new Mesoamerican economic order, but this route shift would allow traders to acquire many of the same valued resources from other zones, such as Ixtepeque obsidian and Motagua jade, both more accessible from the Caribbean. Additionally, as new forms of pan-Mesoamerican interregional economy grew, the southwestern network was vulnerable, given its heavy and expensive reliance on ideological legitimation.

Any such economic decline would be a disaster in states sustained by divine rulers and their sacred charters (e.g., Iannone 2016). In divine kingships the ruler is responsible for anything that happens, positive or

negative. Maya rulers and high elites were not simply CEOs wrestling with problems but were bound by sacred contracts with the people and the supernaturals whose benevolence they were charged with maintaining. Thus, economic decline could have been seen by the subregional population and by new economic partners as a heretical failure, a "sacred contract violation" explaining Cancuen's highly ritualized but total destruction (Demarest, Quintanilla, and Suasnavar 2016). Economic decline may have led to a loss of legitimacy and the failure of the new network.

An alternative scenario reverses aspects of that proposed causal order. Rather than seeing economic decline undermining ideological support for leaders, perhaps it was a more direct failure of new legitimation systems that led to economic network collapse. Drawing on historical and modern examples, we also speculate that the accelerated network creation might have introduced too rapidly new and different ritual concepts and settings for its legitimation. To build trust and solidify support, Cancuen and partner sites rushed to create highly varied forms of ritual settings each tailored to a specific dyadic exchange relationship. This mix of ideologies, rituals, and settings would have been complex, internally inconsistent, and expensive. We investigators were ourselves bewildered for years by Cancuen's crazy quilt of totally different ritual settings in a single site, and the ancient local and regional populace might also have been confused by or skeptical of rapidly introduced aspects of alien ideologies.

In that hypothesis the major factor in the collapse of the new southwest network may have been failure of their programs of legitimation and of their costly investment in monumentality. Despite designs that were clever and often awe-inspiring, these efforts may have failed to gain general acceptance. "Heresy," then, might have been more direct, as participant nonelites and some reluctant rival elites perceived an arrogant violation of ideological norms and practices.

Either of the two above scenarios, or a combination, might explain the sudden great "termination ritual" at Cancuen and the abandonment of other network partner ceremonial centers between 800 and 810. At Cancuen, the evidence suggests that Verapaz intruders ritually killed the royalty and elites; destroyed the monuments, the water system, and even the architecture; left garbage on elite constructions; and buried the entrances to the palace under many tons of loose rock, clay, and debris (see Figure 12.5d and e).

While the final dramatic ritualized form of the termination of Cancuen can be explained in specific Maya terms of failed sacred contracts, the

underlying structural causes can be best understood in terms of economic network theory, as an example of the well-known benefits but high risks of open innovation networks. Meanwhile, the Petén Maya centers had developed the opposite, familiar problems of "community networks": slow acceptance of change, conservatism, increasing intersite dependency and hypercoherence (as seen in recent lidar findings), and, thus, a less competitive and more fragile economy, all of which may have contributed to the decline and collapse of Southern Lowland Classic city-states. Then new, more extensive networks with more resilient forms of economic complexity, production, and exchange and less dependent on expensive legitimating monumentality became the new order of the economic systems of Mesoamerica.

Acknowledgments

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13

A Discussion of Early Monumentality at Pacbitun, Belize

TERRY G. POWIS, GEORGE J. MICHELETTI, JON SPENARD, AND SHELDON SKAGGS

Defining what is "monumental" at Maya sites is not as easy of a task as it might first appear. Labeling features as "monumental" during the Preclassic period might be different from those dating to the succeeding Classic and Postclassic periods. Should the same concept of what is considered to be an initial monumental construction in the Middle Preclassic period also apply to Classic period architecture built to the same scale? If that were the case, one might mistakenly arrive at the supposition that the majority of Classic period constructions are monumental. Labeling them as such might also lead many to conclude erroneously that monumentality was, for the most part, a Classic period development. Furthermore, the same issue might arise when comparing the scale of architecture found within contemporaneous sites of various gradations. For example, would it be fair to compare the Classic period monumental architecture of the large centers of Palenque and Copan with the smaller settlements of the Belize River valley? Doing so may lead to the misconception that only larger centers were built monumentally. These aforementioned issues are indicative of why scale cannot be the lone determinant of monumentality. Quantifying other factors such as labor power, energy and resource expenditure, duration of construction, and the level of labor organization all help to measure the "cost," and thus the monumentality, of a construction for any given site at any given time.

This chapter provides two separate case studies focusing on two significant architectural examples from the site of Pacbitun, Belize. Our first study details some of the earliest known structures at Pacbitun, including the construction of a large Middle Preclassic ceremonial platform known as El

Quemado, or Q, for short. The second study discusses the construction of a more conventional Maya ceremonial assemblage commonly found within sites of the Southern Lowlands known as the E-Group complex. While both of these ceremonial buildings served to center the site in Plaza A, they did so at different junctures in time—one rooted in the Middle Preclassic period and the other prevailing throughout the Classic period. Although the scale of each structure suggests they are monumental, our determination of monumentality is ultimately contingent upon the aforementioned factors. Thus, using Q and the subsequent Classic period E-Group as examples, we discuss "monumental" as it relates to markers of great labor and energy expenditure; as permanent, visible (sacred or ritual) symbols on the landscape; and as symbols of authority and power.

Defining Monumentality

The theme of this volume is how the Maya shaped their world, with a particular emphasis on monumentality. Those familiar with this concept understand that labeling a structure as monumental is easy, but describing why can be difficult. Therefore, for this chapter, we discuss two specific constructions at Pacbitun that we considered worthy of monumental designation. The goal of each discussion is to provide evidence to support our proclamation. First, however, it will be important to review the well-established characterizations and standards of measure used to define monumentality.

Bruce Trigger (1990:119) defined monumentality as embracing "large houses, public buildings, and special-purpose structures. Its principle defining feature is that its scale and elaboration exceed the requirements of any practical functions that a building is intended to perform." He further stated that "the most compelling demonstration of power is the ability of a ruler to consume some of the energy he controls for nonutilitarian purposes" (Trigger 1990:125). In their edited volume on early New World monumentality, Robert Rosenswig and Richard Burger (2012:7) argue that while "large public projects require organization that extended beyond the household level . . . it is not necessarily the case that such organization reflects social stratification or political hierarchy." We note that a major difference between the definitions proposed by Trigger (1990) and Rosenswig and Burger (2012) is the former sees monumentality only appearing in buildings while the latter incorporates all large public projects. Rosemary Joyce (2004) takes an agency-based approach to monumentality in

Formative Mesoamerica. She focuses on the original builders and the possible unintended outcomes that resulted from the first monumental constructions. She notes, "These unexpected outcomes, once produced, had to be integrated in the renewed social structures that were a product of the actions of the workers who raised the first of these monumental buildings" (Joyce 2004:5). Consequently, these new permanent features on the landscape would become "points of future reference" (Joyce 2004:25) and, equally important, "reorganized space, creating center points where none had existed" (Joyce 2004:25). This information provides food for thought when discussing issues surrounding the development of monumental constructions. Clearly, there are many aspects to consider here including: the scale and elaboration of the construction, the amount of labor required/needed, the level of organization required to build it, the way these first public projects transformed the use of space in the community, the new sense of connection to space, and the way the construction reflected social stratification and political hierarchy.

Pacbitun

The site of Pacbitun is a medium-sized Maya center located in the foothills of the Maya Mountains in the Cayo District of western Belize, approximately 3 km east of the contemporary Maya community of San Antonio (Figure 13.1). One of the most distinctive features of Pacbitun is its location at the juncture of two contrasting ecozones: the lowland tropical forest, in which the site was built, and the granitic Mountain Pine Ridge. The terrain on which the site is located is hilly and rolling and has been largely cleared of original vegetation for agricultural and pastoral use over the past three decades. In addition to modern farming, numerous ancient hillslope terraces are in the immediate vicinity of the site, indicating that intensive agriculture was practiced in the outskirts of Pacbitun during its occupational history (Healy 1990a; White et al. 1993). Approximately 1 km south of the site, the terrain rises into the Maya Mountains where the calcareous limestone formation to the west, north, and east of the ruins is replaced by a strikingly different and older granitic geological formation of the Mountain Pine Ridge. The naturally fertile soils trapped in the low-lying catchment basins and valley-like depressions encircling Pacbitun give way to agriculturally useless coarse quartz sands of the Mountain Pine Ridge.

Pacbitun's epicenter, or central precinct, rests atop an elevated, elongated limestone plateau running 5 km in an east–west direction (Healy 1990a).

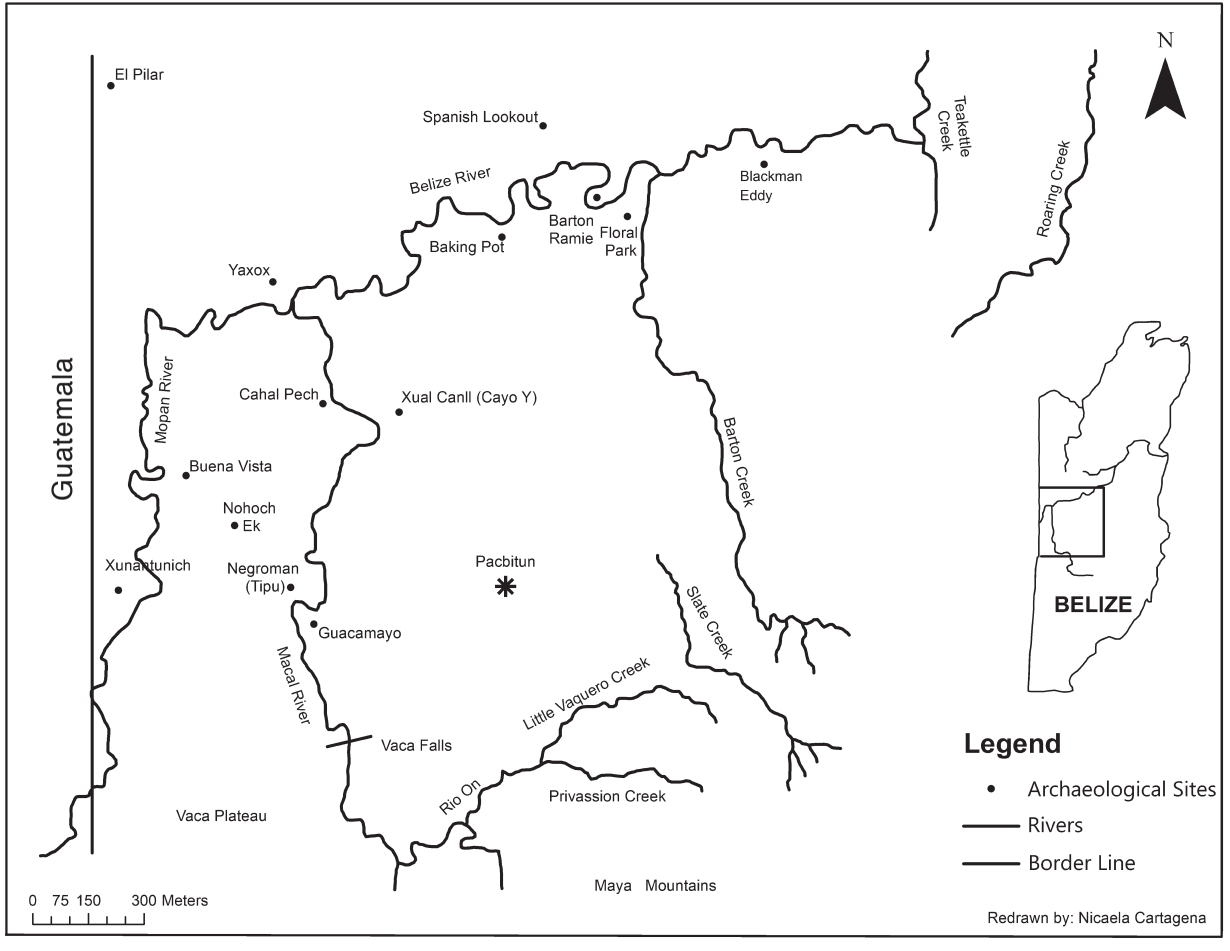

Figure 13.1. Map of Belize Valley showing major sites (map produced by Jon Spenard for PRAP).

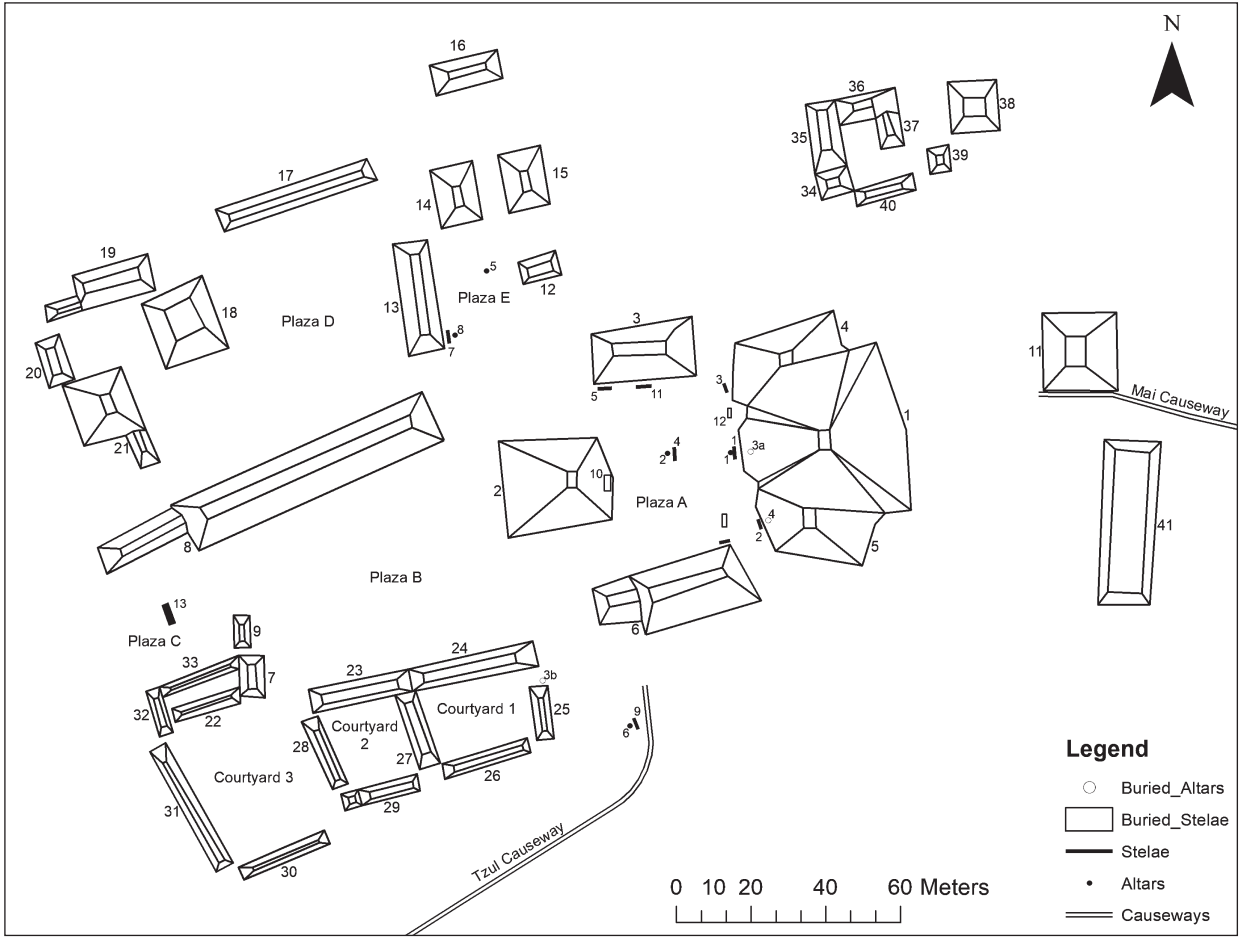

Figure 13.2. Map of the site core of Pacbitun (map produced by Sheldon Skaggs and Nikki Cartagena for the Pacbitun Regional Archaeological Project [PRAP]).

Table 13.1. Refined Pacbitun chronology and ceramic phases

Date range	Period name	Phase name
900–1000 CE	Early Postclassic	Canto phase
800–900 CE	Terminal Classic	Tzib phase
550–800 CE	Late Classic	Coc phase
300–550 CE	Early Classic	Tzul phase
100 BCE–300 CE	Terminal Preclassic	Ku phase
300–100 BCE	Late Preclassic	Puc phase
900–300 BCE	Middle Preclassic	Mai phase

Source: Adapted from Healy, Hohmann, and Powis 2004:208.

Like the plateau on which it sits, the site is situated in an east–west fashion and is relatively compact, consisting of 41 masonry structures covering an area of about 14.5 hectares (Healy 1990a:250). There are three major plazas (A, B, and C) with two additional, more irregular plazas (D and E) located just to the north of the main site axis (Figure 13.2). Twenty stone monuments are situated throughout the site core; three of them, a stela, an altar, and an undefined monument, are carved (Healy 1990a, 1990b; Helmke et al. 2006; Skaggs et al. 2017). Five causeways emanate from the site core (Weber 2011; Weber and Powis 2013) and lead out into a periphery zone dotted by hundreds of small house mounds as well as several minor centers, springs, reservoirs, agricultural terraces, and ritually used caves and rock shelters (Healy et al. 2007; Spenard et al. 2012). Based on investigations in the site core and periphery, Pacbitun has an uninterrupted occupation spanning from 900 BCE to 900/1000 CE (Table 13.1).

Defining Monumentality at the Site of Pacbitun

In the following case studies, we discuss unique architectural manifestations at Pacbitun constructed or modified at different times throughout the site's occupation. In the first study, our analysis of monumentality begins with the evolution of the domestic/workshop structures of Plaza B. We then move to our first monumental example, the late Middle Preclassic ceremonial platform known as El Quemado, or simply Q, constructed in Plaza A in the midst of the flourishing early community at Pacbitun. Our investigations in the core zone of the site have documented physical, locational, and elevational differences between the buildings in Plazas A and B. By highlighting the stark variances between these two plazas, we attempt to determine what the perceived differences between Q and the contemporaneous platforms in Plaza B signified to the Middle Preclassic residents of the site.

In the second case study, we discuss the construction of the E-Group at the onset of the Late Preclassic period. The E-Group at Pacbitun represents the primary ceremonial assemblage for the remainder of the site's occupation. Using this complex for our second case study, our analysis demonstrates how the E-Group label has helped to determine the assemblage's monumentality. The study closes with a discussion concerning an overlooked relationship between Q and the E-Group.

Case Study 1: Early Plaza Constructions

The First Constructions in Plaza B

Investigations in the site core throughout the 1980s, 1990s, and 2000s revealed a long stratigraphic sequence of occupation extending from the Middle Preclassic period (locally known as the Mai phase) to the Late Classic to Terminal Classic periods (Healy 1990a; Healy et al. 2007). Platforms dating from the early Mai phase (900–600 BC) and late Mai phase (600–300 BC) were identified. In Plaza B, five early Mai platforms have been partially excavated. All of them are oval in shape and run in a northeast to southwest direction, with an orientation of 20–25 degrees east of north. Although none of them were fully exposed, they measured approximately 8 m long by 4.5 m wide by 20 cm high (Figure 13.3). The walls of each platform were constructed of two courses of roughly hewn soft limestone blocks. The blocks averaged 25–32 cm long, 16–30 cm wide, and 4–5 cm thick. The floor of each platform is made up of a tamped marl surface measuring 3–5 cm thick. Between the platforms run a 1 m wide alleyway also made of tamped marl. Embedded in the marl floors and alleyways were thousands of marine (mainly conch) shell beads and detritus. The volume of finished shell beads along with those in various stages of the manufacturing process suggests the presence of some form of craft specialization at the site during early Mai times (Hohmann 2002; Hohmann et al. 2018; Hohmann and Powis 1996:122).

In Plaza B the remains of at least a dozen late Mai platforms have been unearthed. The configuration of these late Mai houses differed drastically in orientation and form from early Mai times, ca. 900–600 BCE. By 600 BCE, we see a dramatic shift from the construction of apsidal-shaped houses to rectangular and square ones. They are built directly over the top of the early Mai houses (limestone blocks touch each other from different phases), maintaining this preferred location for the next three centuries. The late Mai platforms, like their predecessors, are aligned adjacent to one

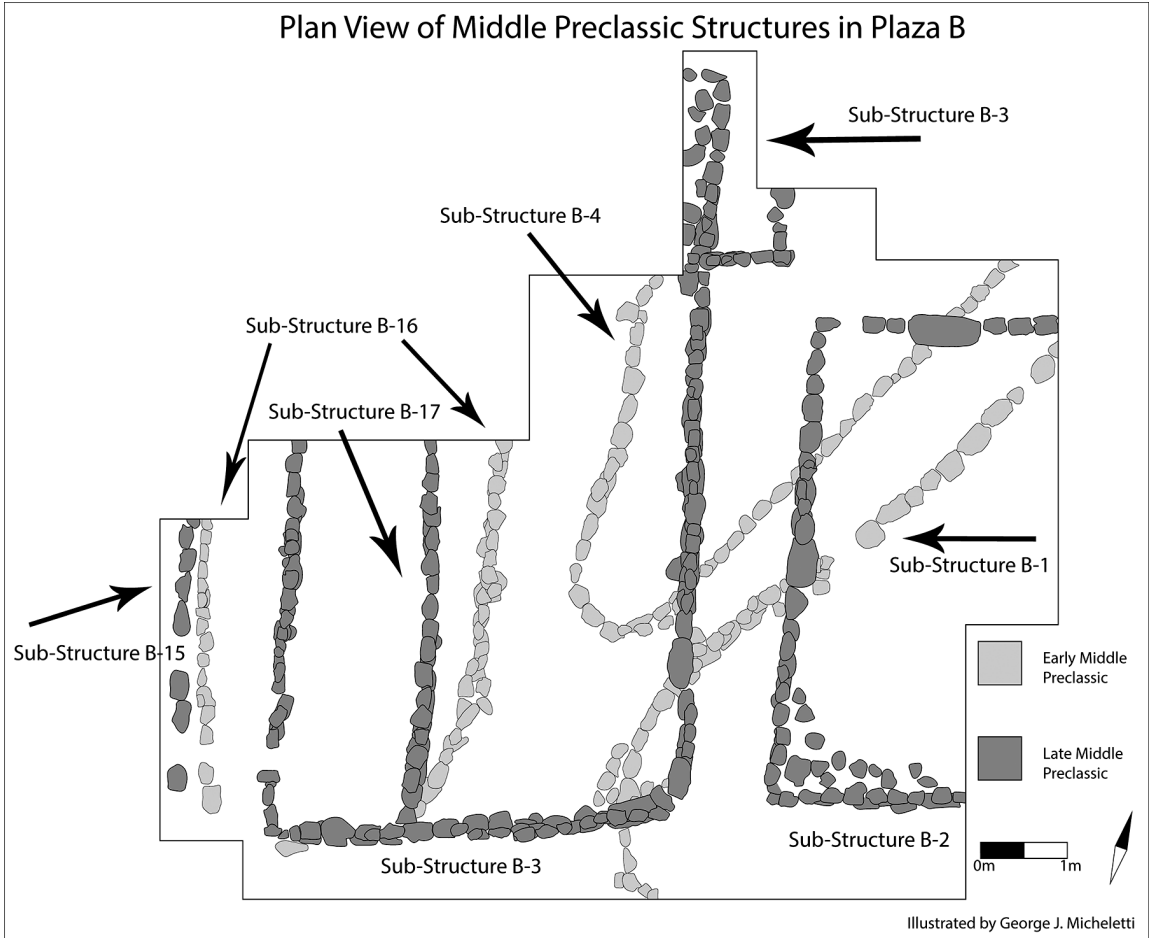

Figure 13.3. Isometric plan of Substructures B-1–B-4 and B-16 in Plaza B (based on photo by Andrew Vaughan for PRAP).

Figure 13.4. Horizontal exposure of Substructure B-2 (photo by Terry G. Powis for PRAP).

another (aligned 20 west of north) with 1 m wide alleyways between them. The presence of alleyways between the platforms indicates the houses were associated and contemporaneous in nature. Late Mai platforms exhibited evidence of postholes in the floors, which suggests the presence of perishable, wattle-and-daub structures. The limestone blocks were bigger and at least one course higher than those of the early Mai platforms, measuring about 40 cm high. Tamped marl surfaces covered both the platforms and the alleyways. The late Mai phase platforms were larger and more elaborate than early Mai houses. Substructure B-2 was completely excavated in 2010 (Figure 13.4) and measured 9 m × 6 m, or 54 m^2 of living/working space (Powis 2009, 2010; Powis et al. 2009). To date, this structure represents the largest late Middle Preclassic example of Maya domestic architecture unearthed in the Belize River valley.

Like early Mai platforms, the late Mai platforms also contained marine shell beads (complete and in various stages of manufacture), shell detritus, and chert drills embedded in their floors and alleyways. Substructure B-2 alone had thousands of marine shell beads, shell detritus, chert microdrills, and burin spalls, indicating the presence of shell-bead workshops at the site

during late Mai times (Hohmann 2002; Hohmann et al. 2018; Hohmann and Powis 1996:122; Spenard et al. 2013).

By the end of the late Middle Preclassic period (ca. 400–300 BCE), the Pacbitun Maya laid down a 1 m thick midden deposit over the top of the late Mai structures in Plaza B. The deposit consisted of dark, organic soil densely packed with domestic refuse (ceramics, lithics, animal remains, and plant remains), shell ornaments in various stages of production, marine shell macrodetritus, chert microdrills, and burin spalls. The presence of the midden over top the Middle Preclassic community signifies a major change of space in that part of the site and is indicative of significant social and political transformation at that time. This late Mai phase community of houses and associated shell workshops was replaced with the first lime-plastered plaza floor in Plaza B, signaling a shift from private to public space.

The First Construction in Plaza A

Understanding the spatial changes in Plaza B requires shifting focus to other areas of the site core. Throughout the Middle Preclassic period, Plaza B was the center of domestic life at the site. By 600 BCE, there was a thriving community at least five times larger than during early Mai times. Given the domestic nature of occupation in Plaza B, we decided to investigate the main plaza, Plaza A, in view of its propensity for ritual/ceremonial associations. Plaza A is the highest point at Pacbitun and served as the ceremonial hub and political arena in the Late Classic period.

Located at the north end of Plaza A, excavations uncovered a large subplaza platform, designated El Quemado, or Q, because extensive burning calcined most of its surface (Micheletti et al. 2016; Micheletti et al. 2017; Powis et al. 2017), which helped to preserve the platform. Ceramics and multiple radiocarbon assays indicate the Pacbitun Maya constructed Q around 600 BC; yet, in five seasons of intensive excavations to bedrock, no earlier platforms had been located beneath the structure. Indeed, research over the past 30 years at Pacbitun shows that Q was the first monumental construction in Plaza A.

Q is a large, T-shaped platform measuring 31.5 m long (east–west) by 20.4 m wide (north–south) by 2 m high (Plate 13.1). It is oriented east–west, with an alignment of 16 degrees west of north. The rectangular foundation is made of faced limestone blocks measuring up to 1 m long and 50 cm wide. The fill of the rectangular foundation consists of dirt, marl, and

Plate 13.1. Photo of the platform El Quemado (or Q) located in Plaza A in the site core of Pacbitun (photo by Jeffrey A. Powis for PRAP).

limestone boulders. The entire platform is covered with a 3 to 5 cm coat of lime plaster, which, as mentioned above, is mostly burned. Although most of the summit has been exposed, we have found no evidence the platform held a perishable superstructure. A lime-plastered plaza surface, only 2 to 3 cm thick, surrounds the platform. Leading up to the summit from the plaza on the south side is the main staircase, consisting of five inset stairs each measuring 6 m wide. These stairs lead to two sets of terraces before arriving at the summit of the platform. Overall, there are eight steps from the plaza to the summit of Q. Two sets of upper and lower armatures flank the large central staircase. Adjacent to the armatures on the east and west sides are a pair of small inset stairways reminiscent of Structure E-VII-Sub at Uaxactun (Ricketson and Ricketson 1937). We have found several pieces of sculpted plaster on the small inset stairs located on the southeastern and southwestern sides, suggesting that masks may have once adorned the corner facades of the temple, although they may have been purposefully removed during a terminal event, discussed below (Powis et al. 2017).

Surprisingly, the stairwells were constructed differently from the rectangular foundation. The Maya used a light-brown marl to mold all of the stairs and insets prior to plastering. Therefore, the rectangular foundation was built first (of stone) followed by the molding of the staircases and outsets (of marl), after which the foundation, stairs, and outsets were plastered over to form one seamless construction.

Chopped corners, the possible removal of plaster masks, extensive burning, caching ceramic vessels, and sweeping of all surfaces suggest the platform may have been ritually terminated and prepared for burial. It was then covered in a 3 to 5 cm thick layer of light-brown marl and subsequently covered with a thick layer of dark clay. Next, four task units (i.e., construction pens) spanning the length of Plaza A were laid down every 8 m in a north–south alignment. These task units were set to build up and enlarge the plaza to its maximum extent, ultimately covering the early platform with the construction of successive plaza floors beginning in the early Late Preclassic period. These plaza floors also served as the base for later constructions in the Classic period.

Making the Case for the First Monumental Construction at Pacbitun

The late Mai platforms of Plaza B formed a tight-knit community, no more than 360 m^2 in areal extent. The community is not situated on the highest elevation point at the site, but the houses are organized in an east–west fashion. The low platforms all supported wattle-and-daub superstructures,

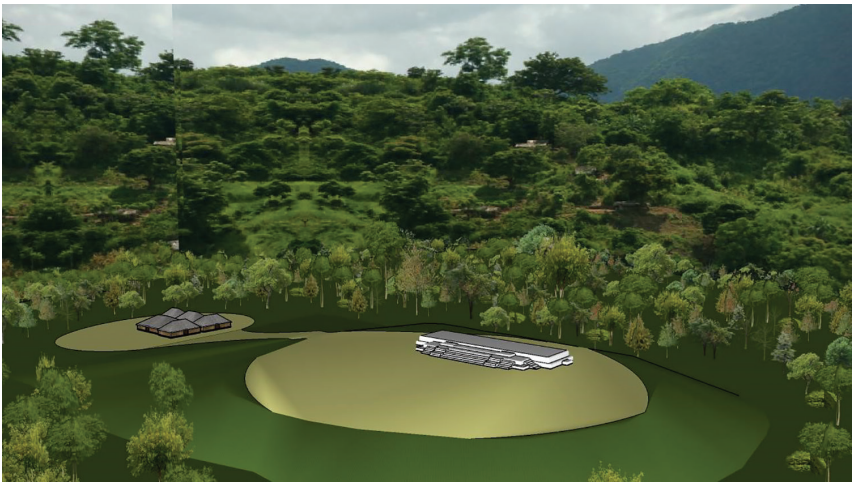

Plate 13.2. Sketchup image of platforms in Plazas A and B during the late Mai phase, ca. 600 BC (image produced by George J. Micheletti for PRAP).

and there is no evidence of burning on any floor surface or platform wall, nor have burials or caches been found in any of them. The presence of shell beads, shell detritus, and chert drills embedded in the floors of the late Mai platforms strongly indicates a household economy based on shell-bead production. Other identified artifacts recovered such as pottery, lithics, charcoal, and animal and shell remains indicate that each platform was residential in nature.

In Plaza A, El Quemado represents the first ceremonial architecture at the site, dwarfing in size anything constructed prior to it. It is also built on the highest elevation point, some 6 m higher than Plaza B, where the domestic platforms are situated (Plate 13.2). Q also represents the broadest and tallest construction (32 × 20 m) at Pacbitun during late Mai times. The size of Q alone, at 640 m^2, is nearly double that of the entire community of houses located in Plaza B. The platform, like those in Plaza B, is rectangular in shape with an east–west orientation. At the time Q was built we also see the first plastered plaza floor construction. Unlike the residential platforms in Plaza B, Q exhibits a plastered surface, stairs, possible stucco masks, and the use of large blocks in its foundation but no perishable superstructure. Marl, while used as floor surfaces in Plaza B, was used as both a construction material (as fill) and a technique (to mold stairs prior to plastering) in Plaza A. The majority of the material inside Q is alternating bands of pink and white marl. To date, no burials have been recovered inside Q, but two

of the three caches excavated were on the summit along the center and transverse lines.

When considering the above, the picture of Q could not be more different from the domestic platforms in Plaza B. Q is larger, broader, and taller, and the amount of labor needed to construct it was considerably higher than that needed for any one house in Plaza B, regardless of whether the platform was built over the short term or long term. Multiple skillsets and more energy from more people would have been needed to construct it (see Hansen 2016:366). For the domestic constructions, members of a single family could be involved, using the template to which all of the houses in Plaza B conformed. For Q, there was no preexisting master plan. House construction in Plaza B could also have been completed over a relatively short period of time. With regard to Q, not only were more laborers needed to haul in the materials from other locations but skilled labor was also required to execute the various stages of construction from designing the initial concept to molding the plaster masks at the end.

An analysis of Q in terms of architectural energetics using the formulas and parameters presented by Elliot Abrams (1994:42–51) produced a range of person-days required for construction. Calculated volume values for the quarrying (earth, limestone), transportation (earth distance of 0.1 to 0.5 km, limestone distance of 0.3 to 0.5 km, and plaster making located from 0.1 to 0.3 km away), along with manufacture and construction, gives a minimum of 4,895 person-days and a maximum of 8,442 person-days. For comparison, this is the same range of required person-days to build the largest Type IV residential structures, such as 9N-82-E at Copan in the Late Classic (Abrams 1994:60–61). Using the same parameters in the architectural energetics for comparison of the residential structures buried under Plaza B (measuring 9 m × 6 m × 0.4 m) found that the residences took between 115 and 207 person-days to construct. This means Q was 24 to 42 times more labor intensive than the residence buried in Plaza B.

As the first construction in Plaza A, Q stands as a solitary platform surrounded by a plaza. It would have been visible not only to the those residing in Plaza B but also those living throughout the region. While the rectangular shape is similar to the house constructions in Plaza B, it differs in its overall elaborated form (e.g., presence of stairs, outsets, and possible stucco masks). The first-time use of lime plaster to cover the foundation of Q created not only a durable construction but also a permanent one on the landscape more enduring than the houses in which the residents lived (see Joyce 2004). No superstructure covered Q, which meant that for the first

time, people were needed from the community to help maintain/refurbish/remodel the platform. The level of upkeep or maintenance of Q would have been a new experience (especially in terms of time) for the late Mai phase residents, something they were not exposed to previously with their perishable houses in Plaza B.

With Q alone on the highest spot of the site, it stood as a powerful symbol of community transformation. The construction of Q up on a hill, separated by height and distance from their houses, represents a novel form of community planning. Whatever kind of activities were occurring on top of the platform were clearly different from the activities of the domestic space at the bottom of the hill. Moreover, because of the platform's permanence, residents may have developed a new sense of place to accompany their new social identity/solidarity.

Case Study 2: The E-Group Complex

Decades of extensive investigations of lowland E-Groups have greatly enhanced our understanding of the cultural impact this assemblage had on the ancient Maya (see Freidel et al. 2017). The most basic form of this archetype consists of a western pyramidal structure, square in plan, set across an open, public plaza from a long eastern platform (Figure 13.5; Chase and Chase 1995). As a product of the Preclassic period, the E-Group complex is widely regarded as one of the first representations of monumentally constructed architecture in the lowlands (A. Chase and D. Chase 1995; 2017b). The earliest E-Groups, originating around the onset of the Middle Preclassic period (1000–300 BC), are not thought to be the product of centralized rulership but rather the result of a unified community bonded by civic and ceremonial activities (Estrada-Belli 2012; Inomata et al. 2013; Saturno et al. 2017). By the Late Preclassic period (300 BC–AD 250), however, the E-Group complex had become a tool for an emerging class of ruling elite who sought dynastic power through euhemerism and the divinity of their ancestors (Chase and Chase 1995; Marcus 1992; McAnany 1995; Saturno et al. 2017). Thus, the contribution of the E-Group complex to the development of early Maya sociopolitical complexity seems to have been quite significant.

A Belize Valley E-Group Variant at Pacbitun

By the close of the fifth century BC, El Quemado was abandoned and the use of the space it occupied was transformed. The Pacbitun Maya shifted their ceremonial focus by constructing an E-Group complex, one of the

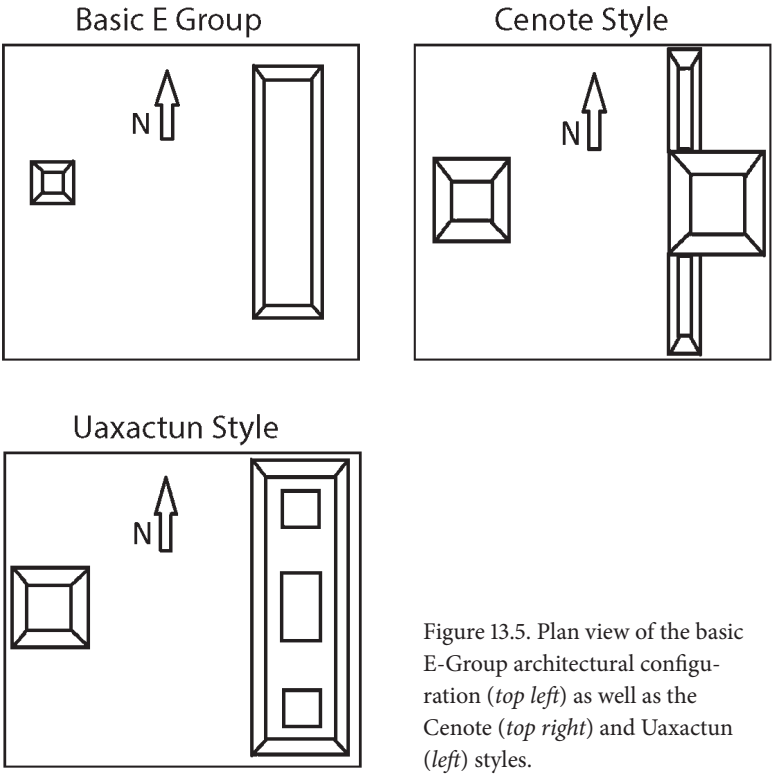

Figure 13.5. Plan view of the basic E-Group architectural configuration (*top left*) as well as the Cenote (*top right*) and Uaxactun (*left*) styles.

most common Southern Lowland architectural configurations found at hundreds of prehispanic Maya sites. However, the construction project that built the E-Group complex could not actually begin until the burial of El Quemado and concurrent construction of Plaza A had been completed as discussed in the previous study. Measuring roughly 80 m east–west by 70 m north–south, Plaza A is an artificially constructed plaza platform built to support the impending Late Preclassic period E-Group. With El Quemado standing nearly 2 m tall, to fully subsume the Middle Preclassic ceremonial platform, the initial Plaza A floor was built to a height of approximately 2.25 m. Already the highest elevational point at Pacbitun, Plaza A was likely the most imposing feature on the landscape. Once the artificial plaza was complete, the construction of the E-Group began.

Though the Early Classic version of Pacbitun's E-Group visually appears to mimic the attributes of an E-Group archetype, its initial construction in the Late Preclassic, like so many other Belize Valley assemblages, did not follow the quintessential E-Group architectural format (Awe et al. 2017).

Structure 2, the assemblage's western building, and Structure 1, the eastern triad's central building, were constructed first (Healy, Hohmann, and Powis 2004:210). Two smaller structures, Structures 4 and 5, were built shortly thereafter, flanking Structure 1 to the north and to the south, respectively. As mentioned above, the construction of an E-Group complex characteristically began with a long, low eastern platform. Architectural additions to the summit of an E-Group typically included a large central structure, which could be flanked by two smaller structures set atop the north and south extremes of the eastern platform (see Figure 13.5; Chase and Chase 1995). Thus, Pacbitun's architectural arrangement in the Late Preclassic period had all the contributing attributes of an E-Group complex minus the supporting eastern platform. However, the subsequent Terminal Preclassic Ku phase construction event enlarged Structure 1, causing it to partially subsume the flanking structures, creating a single, amalgamated construction (Healy, Hohmann, and Powis 2004:210). Structures 4 and 5 were between 2.5 and 3 m high, while Structure 1 may have stood as tall as 7 m at that time (Healy 1990a:256; Micheletti 2016:53). Subsequently, two more construction episodes in the Early Classic Tzul phase nearly doubled the height of each of the eastern structures.

Oddly, after an early Late Classic Coc phase construction event, the flanking structures were built to differing heights, ending the assemblage's long-lived symmetrical aesthetic (Plate 13.3; Micheletti 2016:80). Ten elite burials were also interred within the assemblage during that episode. The unique architectural renovations and addition of multiple burials suggest the E-Group may have been converted to function as an ancestor shrine (Awe et al. 2017). One last construction event in the Late to Terminal Classic Coc/Tzib phases (700–900 CE) raised and capped each of the structures with vaulted masonry superstructures. With seven additional burials placed at this time, the shrine function seems to have persisted. At 16.5 m tall, Structure 1 remained the largest structure at the site. In their final forms, Structures 4 and 5 stood at 12.2 m and 10.9 m, respectively, while Structure 2 stood at 11.2 m tall.

A Monumental Shift in Plaza A

Pacbitun's initial construction of the E-Group variant in Plaza A during the Late Preclassic period coincides with the widespread distribution of this complex at many sites throughout the Southern Maya Lowlands. While sites like El Mirador and Nakbe had mastered the art of monumentality by this time, the majority of settlements in the Southern Lowlands were

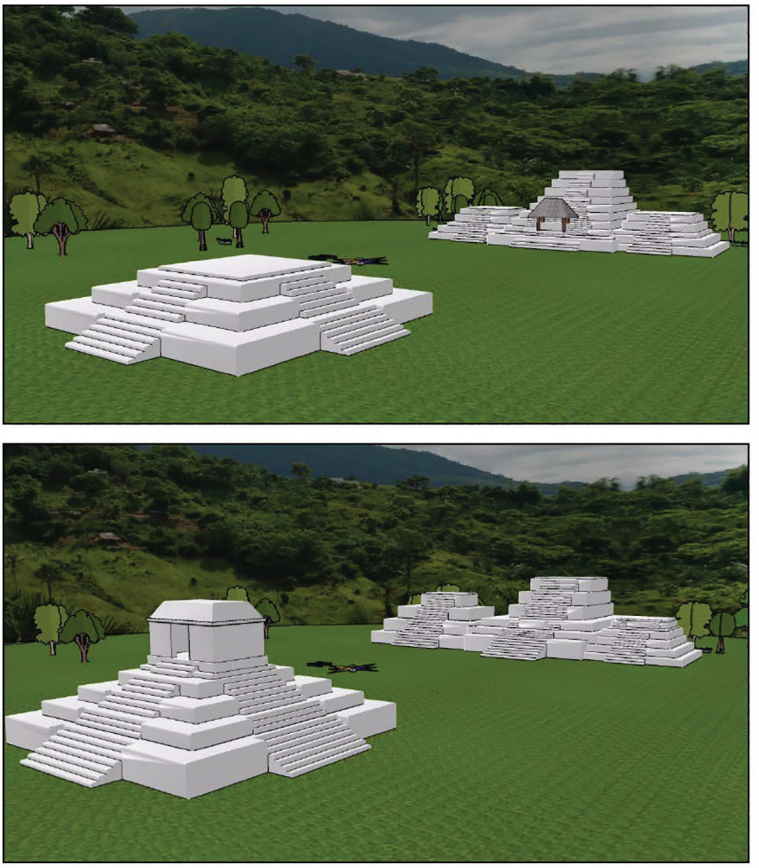

Plate 13.3. An artistic rendition of Pacbitun's E-Group assemblage in the Early Classic Tzul phase (*top*) and early Late Classic Coc phase (*bottom*) (sketchup image produced by George J. Micheletti for PRAP).

mostly devoid of large constructions until the appearance of the E-Group. Although most Maya societies were at least familiar with the concept of "building big" by the Late Preclassic period, the practice of large-scale construction and the permanence of this architecture would have been an unfamiliar notion at many sites. Rosenswig and Burger (2012:13) believe that "undertaking large building projects and creating a built environment like nothing that had previously existed at a particular site or across a larger area" would have had profound "cultural implications." In other words, the construction of such a permanent communal feature would have forever altered the perception of that particular space, which would have created a sense of social and political belonging for those involved (Joyce 2004:8).

Because of this implication, the presence of an E-Group legitimized a location as a polity replete with political authority and civic pride (see Chase and Chase 1995). To some degree, E-Groups could even portray singularity epitomized by variant forms like that those of the Belize Valley (Awe et al. 2017). At the same time, as the complexes became homogenized and widespread, their presence would symbolically represent the community's connection to a larger collective social group. Serving as "foundational" architecture, the construction of an E-Group "establish[ed] a site as a formal Maya place" (A. Chase et al. 2017:17). That is, the standardization of the E-Group complex signifies one of the first identifiable markers of an integrated Maya society made manifest through a shared belief system (Chase and Chase 1995, 2017; Inomata et al. 2013). Yet their role in the coalescence of Maya society is only part of the reason the complex is considered to be monumental.

If size was the lone determinant of monumentality, the humble beginnings of E-Group architecture would certainly contradict this assumption—the earliest assemblages in the Maya Lowlands transitioned from carved bedrock to low earthen mounds and shallow limestone platforms (Chase 1983; Estrada-Belli 2012:207; Inomata 2017:220). While the E-Groups of the Classic period at sites such as Caracol and Tikal are difficult to term anything other than monumental, the initial forms of these complexes and many others were modest in comparison. However, the cost of constructing an early E-Group, a complex typically associated with nonpractical functions, exceeded what was thought to be viable when likened to contemporary architecture. Most researchers agree that E-Groups served as communal spaces for social gatherings and ceremonial performances of solar, agricultural, and calendrical rituals (Aimers and Rice 2006; Aveni and Hartung 1986, 1989; Cohodas 1980; Rice 2004). Thus, following Trigger (1990:119), E-Groups fit into the category of public building / special-purpose structure, implying that the energy expended for construction was spent superfluously, helping to support the complex's monumental label.

Furthermore, prior to E-Group plaza construction, some believe these spaces were likely additions to and/or expansions of domestic settings for special activities during communal gatherings (Doyle 2017a:38–39; Joyce 2004:19). James Doyle (2017a:38) suggests the "enlargement of an idealized living or working space could be considered monumentalization." His point of emphasis, however, is on the civic cohesiveness as a result of the construction, which would have been "motivated by collective gathering rather than the acts of a few to impress the many" (Doyle 2017a:38–39).

Therefore, in addition to early E-Group architecture being "monumental" compared to contemporaneous dwellings, the need for collaboration to construct such a public work, regardless of motivation, also supports the monumentality of the complex.

Moving our discussion back to the epicenter of Pacbitun, even as a variant, the assemblage exhibits enough E-Group attributes regarding its nondomestic, public / special-purpose function for it to also warrant the E-Group's monumental label. Furthermore, the complex remained the largest architectural feature at Pacbitun throughout the site's existence, helping to support its impractical purpose as monumental architecture. What is more, the Late Classic period E-Group–to-shrine conversion attests to the ongoing importance of the assemblage. Those affiliated with the ancestors interred within understood the structure's social influence and used its political potential to solidify their status as Pacbitun's ruling elite.

On the other hand, there are a few issues concerning the monumentality of Pacbitun's E-Group that should be addressed. Aside from the unique physical and functional attributes of Pacbitun's assemblage, what truly sets the site apart from other E-Group centers is its monumental Middle Preclassic predecessor, El Quemado. Unlike many sites with E-Groups, Pacbitun was not "founded" by its E-Group architecture, meaning it was not the first monumental construction at the site, as is so often the case. Built in the Middle Preclassic, El Quemado served as Pacbitun's first monumental ceremonial assemblage predating the site's E-Group by a few hundred years. Although we know little about the function of this large platform, its presence insinuates that Pacbitun's communal bond began long before the construction of the E-Group variant.

While an earlier monumental building does not negate subsequent monumental constructions, the fact that the earlier construction effort was much more extensive might lead some to question the latter's eligibility. When comparing the two constructions, the project that erected Q was clearly far more elaborate than its ceremonial successor. Might this constitute a reconsideration of the E-Group's monumentality at Pacbitun? We would answer this question with an emphatic no. As we have argued several times throughout this chapter, there are many other variables that should be considered aside from architectural size. In this particular case, the two ceremonial constructions under discussion should not overshadow the Plaza A project that is just as deserving of a "monumental" title. The construction of Plaza A, which simultaneously served to bury Q and support the E-Group, would have been a massive undertaking. Why did the Maya

at Pacbitun go through all of this trouble? It is important to remember that, before the E-Group, the artificial plaza, and the construction of Q, the most sacrosanct element was the space itself. Regardless of whether this place was residential, commercial, or hallowed, the gatherings that occurred here helped to establish communal identities and create a sense of belonging. Francisco Estrada-Belli (2012:220) suggests these gatherings formed a communal narrative that became infused with these spaces, which would eventually become "the ceremonial centers where the narrative was retold and enacted." Thus, the excessive creation of Plaza A might actually be a concerted effort to preserve and reclaim this sacred location for the succession of the E-Group variant at Pacbitun.

Discussion and Conclusions

Both case studies in this chapter demonstrate that monumentality refers to more than architectural scale. The labor force, energy, and resources needed to construct El Quemado and the E-Group would have greatly surpassed what was needed to build contemporary domestic structures. In terms of our first case study, we feel we are on solid ground in stating that Q represents a monumental construction—the first one at Pacbitun dating to the late Middle Preclassic period. Two of the more difficult aspects of this designation is determining its societal function and whether the construction reflects social stratification or political hierarchy within the community. To the first point, perhaps Joyce (2004:19) is correct when she states that "these early platforms were built as supra-household spaces for specific activities whose nature may well have included hosting feasts, dances, games, and other community activities." It may also be that Q was built as some sort of a representation of a sacred or ritual landmark. Could Q resemble an intentional effigy of a nearby mountain? Perhaps. Ample evidence indicates the contemporaneous, neighboring Olmec culture and the later Maya considered pyramid-temples synonymous with mountain-caves, and starting at least as early as the Late Preclassic period, the Pacbitun Maya were actively performing rituals in sacred landmarks (Brady and Ashmore 1999; Reilly 2001; Spenard 2014; Spenard et al. 2012; Stuart 1997). It could represent a symbolically significant landmark where different kinds of performances occurred on its steps and summit and involved frequent burning episodes. We believe the construction of Q was a community-sponsored endeavor involving members of each household. Whether there was one particular individual—a charismatic leader—or a

group of revered elders who directed the construction project remains an unanswered question. Could one person have enlisted others in the community to build a completely new type of building? For what purpose? What are the benefits to this leader and to those who followed this leader? Does the mere fact that one directs and others follow indicate some sort of social or political hierarchy at this time? These questions and others need to be addressed if we are able to understand why these early inhabitants of Pacbitun made such a radical decision to construct an entirely new form of building for a particular set of new activities.

Nevertheless, the transformation of the site of Pacbitun during the Late Preclassic period is an exhibition of the residents' abandonment of old practices as they relate to the community in Plaza B and El Quemado in Plaza A. The construction of the E-Group began Pacbitun's conformity to a much larger identity sweeping through the Maya Southern Lowlands. The monumentality of the E-Group is evident in its widespread significance, its use as communal foundational architecture, and its impractical, nonutilitarian function. Whether Pacbitun's sociopolitical institutions began with Q or with the construction of the E-Group, the ability to orchestrate the Plaza A project suggests that the site was fluent and proficient in the art of constructing monumentally.

Acknowledgments

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14

Monumental Landscapes, Changing Ideologies, and Political Histories in the Mopan Valley

M. KATHRYN BROWN AND JASON YAEGER

The upper Belize valley is one of the most intensively studied regions in the Maya Lowlands, resulting in a rich empirical dataset for addressing detailed questions about ancient Maya social and political dynamics. In this chapter, we describe the monumental landscapes at three sites—Early Xunantunich, Buenavista del Cayo (hereafter, simply Buenavista), and Xunantunich—and examine how these landscapes allow us to trace the political history of the Mopan Valley as political authority became more centralized and the institutions of divine kingship developed in the Preclassic period and matured through the Classic period.

The Mopan Valley is marked by a string of five major centers, spaced between 1.5 km and 5 km apart (Figure 14.1). While all sites were occupied by the Middle Preclassic, they had very distinct histories, developing sequentially as political and ritual centers (Leventhal and Ashmore 2004). Early Xunantunich was the valley's first major political center, before it was abandoned by the end of the Late Preclassic, perhaps around 200 CE (Brown 2017). Early Xunantunich appears to have been eclipsed by Actuncan, which experienced rapid growth during the Late and Terminal Preclassic periods (LeCount 2015). Although the nature of the relationship between Early Xunantunich and Actuncan needs further investigation, M. Kathryn Brown believes that these two centers may have been affiliated prior to Early Xunantunich's abandonment, as we discuss below.

Lisa LeCount and colleagues (2018) have documented that Actuncan declined early in the Early Classic period (250–600 CE), a time when nearby Buenavista grew rapidly to become the valley's dominant power (Ball and

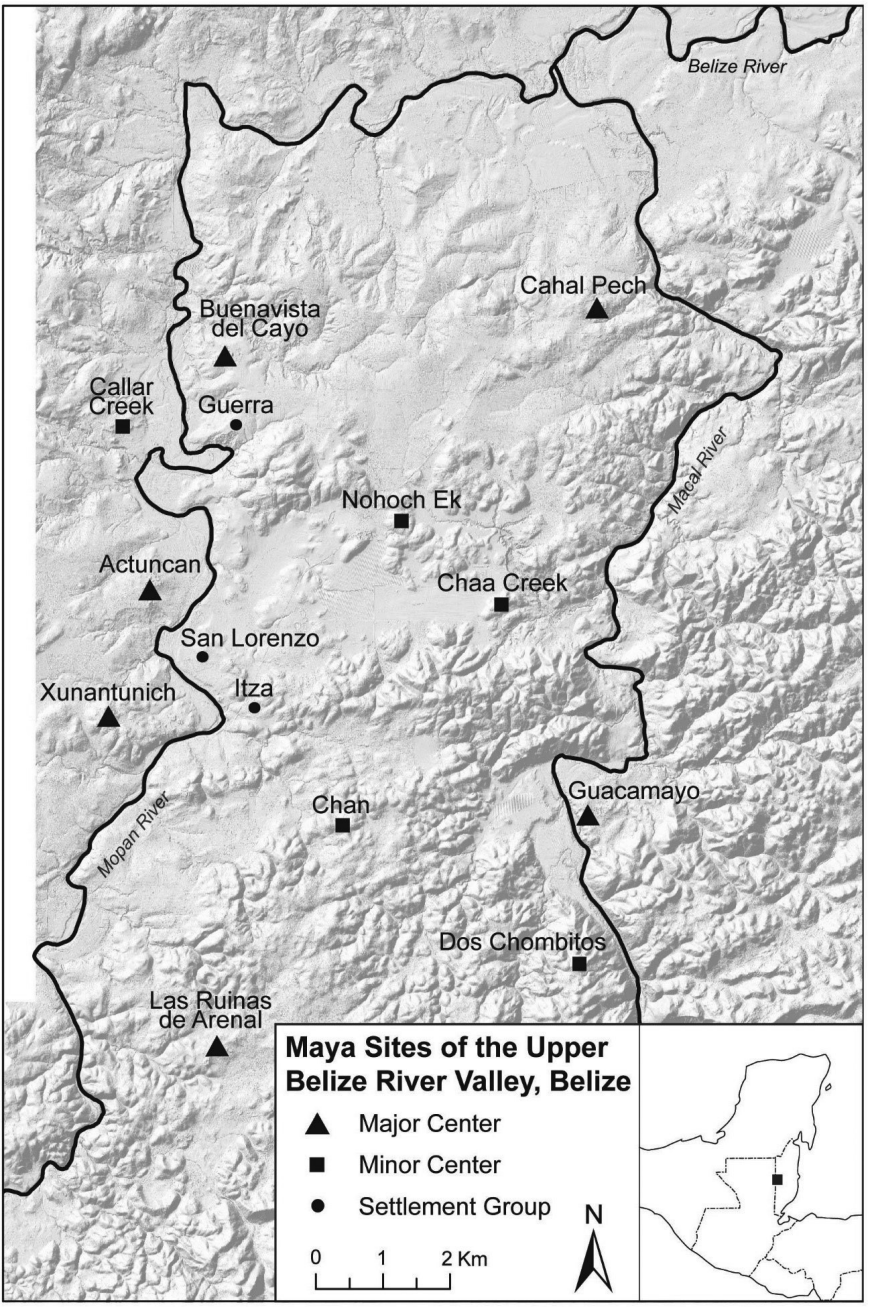

Figure 14.1. Map of the Mopan Valley.

Taschek 2004). Buenavista in turn was eclipsed by Xunantunich (LeCount and Yaeger 2010a). This remarkable pattern raises many questions about the nature of Maya political authority and competition, and the roles that ritual, political, and economic factors played in the rise and fall of competing polities. Because we lack the space to reconstruct the entire political history of the Mopan Valley in all of its complexities, we focus on three major political centers that ruled the Mopan Valley at different times because they illustrate three different forms of political regimes (LeCount et al. 2018) with different sources of authority.

We begin with Early Xunantunich in the Middle and early Late Preclassic periods, approximately 800 BCE to 200 CE. Rituals, particularly related to agriculture, at this early center helped lay the ideological foundations of political complexity and early kingship in the Mopan Valley. We then move forward to the Early Classic period (250 to 600 CE) to Buenavista, where we show how the site's center was remade to focus on political rituals and royal ancestors as it became the capital of a polity ruled by divine kings, *k'uhuul ajawtaak*. We finish with a discussion of the Late Classic period, spanning roughly 600 to 780 CE, a period that saw the political apogee of Classic Xunantunich, a militaristic polity ruled by powerful divine kings with strong ties to the larger kingdom of Naranjo, 14 km to the west.

Ritual, Sacred Landscapes, and the Development of Complexity at Early Xunantunich

Early Xunantunich is a Preclassic ceremonial center located 800 m east of the heart of Xunantunich's Classic period core (Figure 14.2). Despite a very long history of investigation at Xunantunich, researchers did not discover Xunantunich's Preclassic core until the 1990s (Robin et al. 1994), and its full extent was not revealed until a lidar survey in 2013 (Brown et al. 2016). The heart of Early Xunantunich was a pair of E-Groups (Brown 2017; Brown et al. 2017), to the east of which was the site's largest plaza. That plaza was framed by large platforms to the north and to the east. The northern platform, O/A-2 Platform F1, is the largest construction in the early ceremonial core and provides a commanding view of the surrounding valley. Masonry stairways led to the top of the platform, which we believe was associated with early rulers (Rawski 2017).

Because Early Xunantunich was abandoned by the end of the Late Preclassic (perhaps around 200 CE), it is an ideal location to examine the role of ritual and religion in the rise of complexity, as the center's layout was not

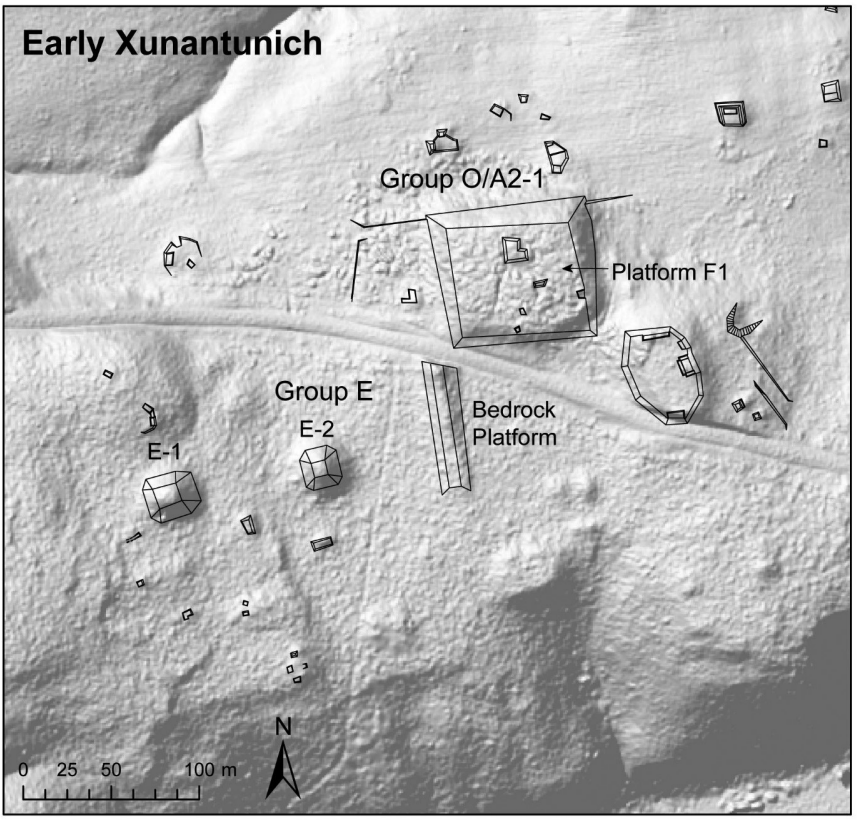

Figure 14.2. Map of Early Xunantunich.

altered significantly or buried by later architecture (detailed in Brown 2013, 2017; Brown et al. 2017).

At sites across the Maya Lowlands, the early Middle Preclassic (1000–600 BCE) witnessed the construction of the first E-Group complexes, the earliest form of public architecture known in the Maya Lowlands (Brown 2017; A. Chase et al. 2017; Estrada-Belli 2011; Inomata et al. 2013). E-Groups were built to accommodate communal gatherings, and scholars have argued that E-Groups were venues for rituals related to maize agriculture, the mainstay of these earliest villages (Aimers 1993; Aimers and Rice 2006; Brown and Bey 2018; Cohodas 1980). Celebrations likely included solar rituals and commemorations of the resurrection of the Maize god (Stanton and Freidel 2003). Anthony Aveni and Anne Dowd (2017:91) suggest that the "spread of the E-Group complex might indicate the innovation and diffusion of this new ritual technology for the assurance of agricultural prosperity in maize production." We agree with these arguments, and we

believe that sponsoring construction projects and ritual performances at these important places on the landscape allowed early Maya community leaders to elevate their social status. Furthermore, burials of exalted members of the community in these sacred locations was a way to honor important ancestors while also reinforcing and legitimizing a newly emerging social hierarchy (Brown 2013, 2017).

Construction History at Early Xunantunich

The early Middle Preclassic inhabitants at Early Xunantunich constructed the region's earliest known E-Group by leveling the soil on a high terrace overlooking the Mopan River and carving bedrock to form a low, long eastern platform. This platform was paired with a western platform, Structure E-2. The earliest version we have documented to date, Structure E-2-3rd, was a three-tiered masonry platform. Although the upper tier had been partially dismantled, we estimate that this structure reached a height of 4 to 4.5 m. Ceramics from the fill suggest an early Middle Preclassic date, perhaps as early as 700 BCE. A large, worked stone slab was encountered in front of Structure E-2's eastern face. Its dimensions and smooth size suggest it was a stela, and its relatively small size supports our inference that this was a Middle Preclassic monument, albeit displaced somewhat from its original location.

This E-Group was replaced by a second E-Group located just to the west sometime around 600 BCE. Structure E-2 was rebuilt to become the eastern complex of the new E-Group. The central element was a two-tiered pyramid oriented to the west with wings extending to the north and south. The result was a linear complex with an elevated central pyramid resembling a Cenote-style E-Group (Chase and Chase 1995). Structure E-1 was built to form the western element of the new E-Group. We have yet to fully investigate the structure, but its final form appears to be a radial pyramid approximately 7 m tall.

The sloping plaza area of the later E-Group was heavily modified with terraces and paved ramps that channeled traffic and, presumably, ritual processions between the structures (Brown 2017). Directly in front of the central staircase of Structure E-2, a series of postholes indicates that a small wooden structure, likely an altar or *mesa*, was periodically erected and dismantled, suggesting that cyclical ritual ceremonies occurred at this location. A burned post fragment associated with the structure returned an accelerator mass spectrometry (AMS) radiocarbon date of 2435 ± 20 BP (UCIAMS-112169), calibrated at the 95.4% range to 746–407 BCE. On the

associated plaza floor, a partial Middle Preclassic Savana Orange chocolate pot was found associated with burned wood fragments with the same radiocarbon dating, 2435 ± 20 BP (UCIAMS-12168). These two AMS dates securely place the use of the altar and Structure E-1-2nd in the Middle Preclassic.

Some rituals appear to have been conducted during the night hours, as a circular depression approximately 1.5 m in diameter was cut into the plaza surface on centerline in front of Structure E-1. This feature was filled with fire-cracked rock, ash, and large fragments of burned wood. AMS radiocarbon analysis of three separate samples yielded identical dates of 2030 ± 20 BP, calibrated to 94 BCE–26 CE at the 95.4% interval (samples PSUAMS-3621, PSUAMS-3622, PSUAMS-3623), confirming that use of the E-Group continued into the Late Preclassic period. Additionally, two smaller circular fire features were discovered in front of Structure E-2 (Brown 2017). These features are similar in form to modern Mayan fire altars that are typically lit before sunrise (Brown 2012).

Our investigations have not uncovered burials within the Middle Preclassic phases of the E-Group structures, but we have encountered a Middle Preclassic burial in the center of the westernmost E-Group plaza. From its stratigraphic position, we believe this burial dates to the Middle Preclassic (possibly 700–600 BCE), but radiocarbon dating will be necessary to confirm this inference. The individual was an adult male (Carolyn Freiwald, personal communication, 2015) interred in the plaza without grave goods. His skull was missing, but the absence of any cut marks on the vertebrae and the presence of three teeth indicate the head was removed after decomposition, suggesting an act of curation and veneration. At the nearby site of Chan, a Middle Preclassic adult male interred in the center of the E-Group plaza was also subjected to postmortem skull retrieval (Novotny 2012; Robin et al. 2012), suggesting a broader pattern of burial rituals in early E-Groups in the Belize River valley (Brown 2017; Brown et al. 2018).

The final phase of Structure E-2 dates to the Late Preclassic, but it was poorly preserved because most of the masonry was removed in antiquity. Structure E-2-1st appears to have been a two-tiered pyramid set on a low platform, similar to the previous phase. At its summit, we encountered a masonry burial chamber that had been reentered in antiquity; only a single Middle Preclassic jar (presumably an heirloom) and three fragments of bone remained (Brown 2013). Worked *Spondylus* shell ornaments found next to the chamber may have been part of the original burial assemblage and suggest a high-status burial, given the economic and ideological value

of *Spondylus* (Freidel et al. 2002). The chamber was then refilled and its position marked by an incised slate slab measuring approximately 40 cm × 60 cm (Brown 2013). Although the preservation was poor, the image appears to be a standing adult male in profile.

We argue this burial marked an important inflection point in the political history of Early Xunantunich: the individual placed here had such a degree of distinction from the rest of his or her community that he or she was afforded the status of a formal burial chamber. Furthermore, the burial's placement in the summit of a symbolic, sacred mountain that had been the community's focal ritual structure for centuries suggests a change in the ideological nature of that space from communal ritual space to restricted, elite space and the establishment of a strong social hierarchy by this time. The bones of this individual, presumably an early ruler, may have been removed when Early Xunantunich was abandoned, as the plaster floor above the chamber was never patched.

Early Xunantunich's first rulers were able to mobilize significant amounts of labor for the E-Group and other projects, such as the northern platform, O/A2-1 Platform F1. The final phase of this enormous feature measured approximately 80 m by 90 m and is 10 m tall on its north side. Although investigations of this platform are ongoing (Brown et al. 2017; Rawski 2017), we believe that it functioned as a prominent location for performance and ritual activities. Our excavations have revealed two phases so far; the earliest likely dates to the late Middle Preclassic (ca 400 BCE). The penultimate phase had a central staircase on the southern side flanked by three tiers of outset terraces bearing traces of stucco decoration, likely from deity masks that reinforced the sacred nature of the building (Rawski 2017). Zoe Rawski (2017) suggests that these flanking terraces, although rather small, could have been used as stages for performances that would have served to connect the early rulers to the ideological symbols, presumably referencing deities, displayed on the building.

The northern platform was expanded and rebuilt significantly during the Late Preclassic, a time when the nearby center of Actuncan was also growing (LeCount 2015; Simova et al. 2015). Along the structure's central axis, we recovered a consecratory lip-to-lip cache of unslipped bowls that contained two greenstone effigy heads (Rawski 2017). One of the greenstone heads has affinities to the famous jade effigies found cached at Cerros. David Freidel and Linda Schele (1988b) argue that these effigies represent diadem jewels and were accoutrements linked to the institution of *ajaw*. The second effigy

is particularly interesting as it was heavily worn and carved in a Middle Preclassic style, suggesting that it was an heirloom.

This cache suggests that the northern platform was targeted for ritual activities associated with the institutionalization of kingship (Brown et al. 2017; Rawski 2017). In that respect, it is important to note that the cache dates to the same period as the masonry burial chamber discussed above, suggesting that social hierarchies and political centralization, likely including the institution of *ajaw*, had developed at Early Xunantunich by the Late Preclassic and that ritual performances at both the E-Group and northern platform supported this newly developed institution.

Early Xunantunich in a Sacred Landscape

Early Xunantunich was situated at the center of a larger sacred landscape created by the construction of shrines on nearby hilltops directly aligned with the axes of the E-Group complex (Figure 14.3). Along the east–west axis, the Maya leveled the ground surface of the nearest hilltop to the west and constructed a small platform or altar, 3.5 m by 6 m, which would later be covered by the main platform of Xunantunich's Late Classic Group D and the pyramidal Structure D-6 (Brown et al. 2017; Lytle 2017). The Preclassic platform did not support a superstructure and was associated with thousands of fragments of Middle and Late Preclassic serving bowls and jars (Lytle 2017; Robin Robertson, personal communication, 2017), suggesting the shrine was a location for specific activities such as ritual feasting, pilgrimage offerings, or renewal ceremonies over the course of generations. We offer the Postclassic Wayeb ceremonies of renewal as a strong analogy. As Bishop Diego de Landa (Tozzer 1941:151–152) described, Wayeb rituals included the breakage and disposal of utilitarian pottery vessels. Similarly, Allen Christenson (2016:27) describes a modern renewal ceremony at a community near Momostenango when every household breaks its primary vessel for making *nixtamal* and deposits fragments on a nearby mountaintop shrine where a large mound of sherds has accumulated. The parallels are striking between the Preclassic hilltop shrine at Early Xunantunich and these more recent renewal ceremonies, suggesting that the smashing and placing of vessels at hilltop locations is an enduring tradition in the Maya world.

Along the same axis (see Figure 14.3), the ancient Maya modified the bedrock on the nearest hilltop to the east and packed cobbles and marl fill to make a level surface at the Itza site. Like the western hilltop shrine,

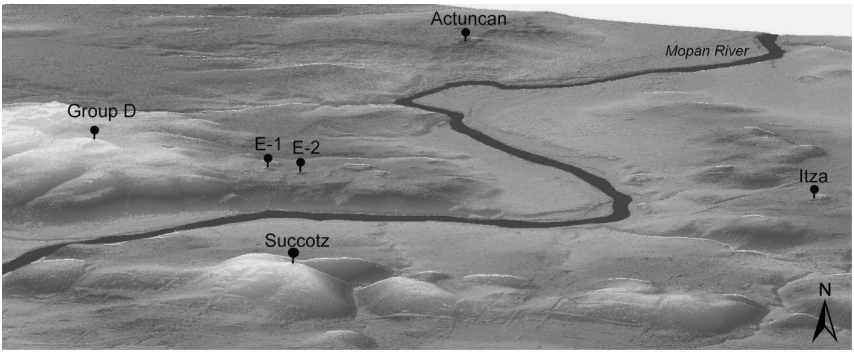

Figure 14.3. Map showing ritual landscape and hilltop shrines at Early Xunantunich.

this location was appropriated during the Late Classic period for a small pyramid that was likely an ancestor shrine. Our excavations of 27 m^2 in the associated plaza revealed a palimpsest of more than 60 postholes cut into bedrock. They clustered into two size categories: smaller postholes (10–15 cm in diameter) were shallow and may represent the remains of altar or *mesa* features like those associated with the Early Xunantunich E-Group discussed above.

The larger postholes (20–30 cm in diameter) penetrated deeper into bedrock. Because we could not discern any pattern with the larger posts, we suggest that these represent single posts that were periodically erected. These may have been symbolic of the raising of the World Tree in the east during important calendrical events. Posts of similar size were erected in front of the Preclassic eastern structure of the E-Group at Cival (Estrada-Belli 2011, 2017), and it is interesting to note that the Late Preclassic San Bartolo murals depict World Trees associated with specific sacrifices at the four world directions (Taube et al. 2010). The erecting of posts symbolically representing the World Tree is a practice that continues today in some modern Maya communities (Cook 2000). As Christenson (2016:41) states, "The raising of four World Trees at the limits of the world at the moment of creation is one of the most ancient Maya themes." As was the case with the western shrine, Middle and Late Preclassic ceramic material associated with the postholes at the Itza site indicate an enduring tradition of erecting posts in this sacred place, possibly associated with renewal celebrations or used to mark the rising sun on certain important dates.

There are several hilltops south of Early Xunantunich that could have served as locations for Preclassic shrines. One is perfectly aligned with the axis of the bedrock platform of the early E-Group described above. On a

second hilltop just to the east of that one sits the Succotz site, which has a small pyramid that likely dates to the Classic period. Both of these locations are strong candidates for Preclassic shrines with later reoccupation, like the western and eastern shrines discussed above.

There is no salient natural hilltop north of Early Xunantunich, but the north–south axis of the bedrock platform points directly to the massive, 28 m tall triadic temple group at Actuncan. The complex sits atop a large basal platform that includes Middle Preclassic construction episodes (Mixter 2016). These earlier phases have not been explored in detail, but their placement on this alignment leads us to hypothesize that some of these earlier platforms were part of the larger Preclassic sacred landscape centered on Early Xunantunich. Actuncan's growth and Early Xunantunich's abandonment in the Late Preclassic may have entailed the appropriation of this earlier sacred landscape and its reorganization centered on Actuncan.

Rituals at mountain shrines located in cardinal directions have been documented among Highland Maya populations today (Christenson 2016), indicating the deeply rooted tradition of establishing a sacred landscape or, rather, embedding the community within a sacred landscape through ritual practices. The Preclassic ceremonies and celebrations at these shrines—and likely at others that remain undiscovered—had several purposes. First, they would have provided an opportunity for aspiring and emerging rulers at Early Xunantunich to organize and sponsor ritual events, providing the food and valuable objects required in such rituals. Second, they would have served to map out the early polity's territory. This included agriculturally important zones: low hills with well-drained loamy soils well suited to maize agriculture, particularly when modified using the terracing technology that developed in the Middle Preclassic, and the Mopan River's floodplain, where a 3 m thick accumulation of alluvial sediments intermingled with charcoal and Preclassic artifacts reflects generations of slash-and-burn farming of the rich alluvial soils, reinvigorated by periodic flooding (Timothy Beach and Leila Donn, personal communication, 2017). The crops grown in these areas not only supported a growing population. They also provided surplus foodstuffs that could be given as offerings to deities and tribute to aspiring leaders and, likely, divine kings by the Late Preclassic.

The other important resource within the territory demarcated by the hilltop shrines was the Mopan River itself. It was an important source of fish, turtles, mollusks, and other foodstuffs as well as a key transportation corridor that connected the area with the Caribbean Sea to the east and

the Petén to the west. Information and people passed along this route, and it is likely that valuable trade goods did as well, such as the greenstone found in the dedicatory cache in O/A2-Platform F1 and marine shell like the *Strombus* found in various contexts and *Spondylus* associated with the burial chamber in Structure E-2-1st at Early Xunantunich.

While Early Xunantunich was the location of the Mopan Valley's largest public architecture of the Middle Preclassic and early Late Preclassic, there were contemporary settlements throughout the region. Some of these would grow into politically powerful locations, such as Buenavista, Actuncan, and Arenal; others would continue as dispersed settlement nodes; and some would be abandoned. After Early Xunantunich's abandonment ca. 200–300 CE, Actuncan became the region's preeminent political center, with its massive triadic complex, carved stone stela, ball court, E-Group, and several large plazas. It would in turn be eclipsed by Buenavista in the Early Classic period.

Royal Rituals, Ancestor Veneration, and Divine Kingship at Buenavista del Cayo

Buenavista is located 5.5 km north of Xunantunich overlooking the modern floodplain. The site has four major plazas and, like Early Xunantunich, emphasizes an east–west orientation (Figure 14.4), suggesting that its arrangement was conceived during the Preclassic (Ashmore 1989). The Central Plaza is dominated by two large pyramids, 20 m and 17 m tall, and was the location of most of the site's plain stelae and altars (Ball and Taschek 2004). The East Plaza was the location of the site's first E-Group (Yaeger et al. 2016) before becoming Buenavista's marketplace in the Late Classic period (Cap 2015). The West Plaza is framed by the royal palace complex and an elite residential complex, the West Acropolis and the South Plaza Group, respectively, and by the site's tallest pyramid, Structure 1. Late and Terminal Classic parapets protect the West Plaza's north side and appear to continue along the North Plaza's west side (Luzmoor 2013; Yaeger et al. 2013).

Founded in the Middle Preclassic, Buenavista became a center of some political importance during the Late Preclassic (Ball and Taschek 2004). It blossomed, however, during the Early Classic, as political dominance in the valley shifted from Actuncan to Buenavista, likely around the turn of the fifth century (LeCount et al. 2018). The end of Actuncan's Late Preclassic political apogee is indicated in a stark reduction in monumental construction. Important complexes, including Structure 26 in the E-Group, have no

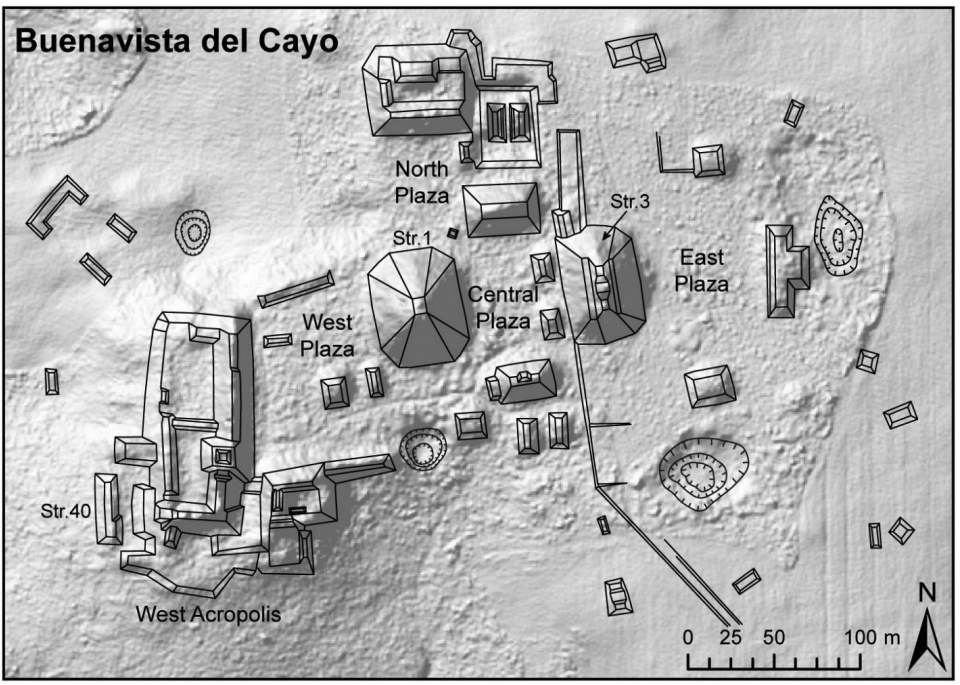

Figure 14.4. Map of Buenavista del Cayo.

documented Early Classic construction, and those few monumental buildings that were modified in the Early Classic had only one construction episode (Mixter 2016; see also LeCount et al. 2018; McGovern 2004).

While Actuncan was declining, Buenavista was growing, and its monumental landscape was reconfigured to host the rituals and events that supported divine kingship. The southern ball court was refurbished during the Early Classic, and construction of the northern ball court may have been initiated during this time (Ball and Taschek 2016). The South Plaza Group and the West Acropolis both saw significant expansion with multiple construction episodes over the course of the Early Classic period (Ball and Taschek 2018), suggesting the polity's rulers and elite families were growing in wealth and power.

One of the most labor-intensive construction projects occurred early in the Early Classic: a massive, concerted program to reconfigure and formalize the Central Plaza (Ball and Taschek 2018). This included the raising, leveling, and surfacing of the Central Plaza and the initial construction or significant remodeling of the structures associated with the plaza, including the two main pyramids, Structures 1 and 3.

The most convincing evidence that Early Classic Buenavista was ruled by a royal dynasty comes from the Central Plaza where two royal burials, dating to ca. 450–550 CE were encountered (Yaeger et al. 2015; Yaeger et al. 2018). The first was a large chamber that had been reentered by the ancient Maya and the human remains removed, likely for veneration and reburial elsewhere. Below that was an elaborate crypt that held the remains of a robust male who was interred with five ceramic vessels and an assemblage of shell jewelry, including a large carved shell gorget (Plate 14.1) naming its bearer as Naah Uti' K'ab, the king of Komkom (Yaeger et al. 2015). This important finding confirms that Buenavista was ruled by a royal dynasty by 450 CE, likely with ties to Tikal and Teotihuacan (Yaeger et al. 2018). A slightly later tomb was discovered in Structure 3 in 2018. The individual was laid to rest on a wooden bier along with 19 ceramic vessels, mosaic jewelry and a mirror, a stingray spine and obsidian bloodletters, and a single large jade bead (Yaeger et al. 2019). The assemblage is suggestive of a royal burial (Coe 1988; Fitzsimmons 2009; Healy, Awe, and Helmuth 2004), and the tomb provides further evidence of Buenavista's place as the seat of political power during that period.

The growth of Buenavista in the Early Classic occurred within a broader context of growing populations and concomitant burgeoning economic potential. Investigations of the Buenavista settlement zone immediately south of the site core revealed rapid growth, more than doubling from the Late Preclassic to the Early Classic period, when 87% of the residential groups were occupied (Peuramaki-Brown 2012). This rapid growth coincided with the construction of the largest group in the settlement zone, BVS-007, which Meaghan Peuramaki-Brown (2012) infers to be an administrative complex that served to integrate the growing populace with the political and economic institutions centered at Buenavista itself.

Buenavista's political trajectory continued into the early part of the Late Classic period. Excavations by Joseph Ball and Jennifer Taschek (2016, 2018) have documented that the Central Plaza underwent a major renovation and amplification in the second half of the seventh century. The plaza was resurfaced, all of the existing structures were expanded considerably, and three new structures were added. Most of the center's known stelae and altars were emplaced at this time as well. During the late seventh and early eighth centuries, a series of noble burials were placed in Structure 1-2nd, suggesting the site continued to be ruled by powerful rulers, an inference corroborated by the continued use of the royal palace. The site's marketplace was established during early Late Classic as well (Cap 2015),

Plate 14.1. The Buenavista Gorget; measures 13.2 cm by 9.5 cm.

suggesting that the polity's rulers benefited from their support and patronage of economic exchanges among a burgeoning population (also LeCount et al. 2018).

In Burial BV88-B11, excavated by Ball and Taschek in Structure 1-2nd, a young nobleman was laid to rest wrapped in a jaguar pelt atop a carpet of thousands of obsidian prismatic blades, accompanied by *Spondylus* shells, jade jewelry, and a bundle of stingray spine bloodletters (Taschek and Ball 1992). Of special interest is the presence of a polychrome vase with a text indicating that it was commissioned for K'ahk' Tiliw Chan Chahk', the powerful ruler of Naranjo. Most scholars interpret this vessel as a gift given to cement Naranjo's alliance with Buenavista (Ball and Taschek 2018; Houston et al. 1992; LeCount and Yaeger 2010a; Leventhal and Ashmore

2004; Taschek and Ball 1992). At the same time, Naranjo was building alliances with other polities along the Mopan River, including Xunantunich (Helmke and Awe 2016b; LeCount and Yaeger 2010a) and Ucanal (Houston et al. 1992). Despite this alliance, Naranjo's stelae record two attacks by Naranjo on Buenavista (Komkom), one in 696 CE and another in 726 CE (Yaeger et al. 2015). The burning and sacking of Structure 40 and the South Plaza Group around the same time suggest these events represented significant blows to Buenavista. Classic Xunantunich, likely founded as a political center around the turn of the seventh century, eclipsed Buenavista by the turn of the eighth century, reaching its political apogee and dominance of the Mopan Valley during the eighth century (Leventhal and Ashmore 2004; LeCount and Yaeger 2010a; LeCount et al. 2018).

The Late Classic Period: Divine Kingship

Of the sites discussed in this chapter, Classic-period Xunantunich is the best known, thanks to a long history of research beginning with the early explorer Thomas Gann and continuing today (Anderson 1966; Braswell 1998; Brown et al. 2017; Gann 1894–1895; Helmke and Awe 2016a, 2016b; Keller 2006; LeCount 1996; LeCount et al. 2002; LeCount and Yaeger 2010a, 2010b; LeCount and Yaeger, eds. 2010; MacKie 1961, 1985; Maler 1908; McCurdy 2016; McCurdy et al. 2014; Morley 1937–1938; Pendergast and Graham 1981; Satterthwaite 1950a, 1950b; Schmidt 1974; Thompson 1942). This research has included investigations in the monumental core of the site as well as survey and excavation of settlements in the surrounding countryside (Blackmore 2008; Connell 2000; Robin 1999, 2012; VandenBosch 1999; Wyatt 2008; Yaeger 2000). The research design of the Xunantunich Archaeological Project, in particular, focused on understanding the site's political organization and florescence in the Late Classic period and the continuation of political sovereignty into the Terminal Classic. The results of that project are presented in depth elsewhere (LeCount and Yaeger, eds. 2010); here we offer some observations and conclusions most salient to questions of changing political organization in the Mopan Valley.

Sitting on a prominent ridgetop overlooking the Mopan River, Xunantunich is dominated by El Castillo, the massive 39 m tall acropolis that sits at the center of the site (Figure 14.5). To its north are three plazas, two of which are framed by pyramids and a ball court; the third is formed by a quadrangular elite residential complex. Plain and carved stone monuments were erected in front of most of the pyramids of Plazas A-I and A-II

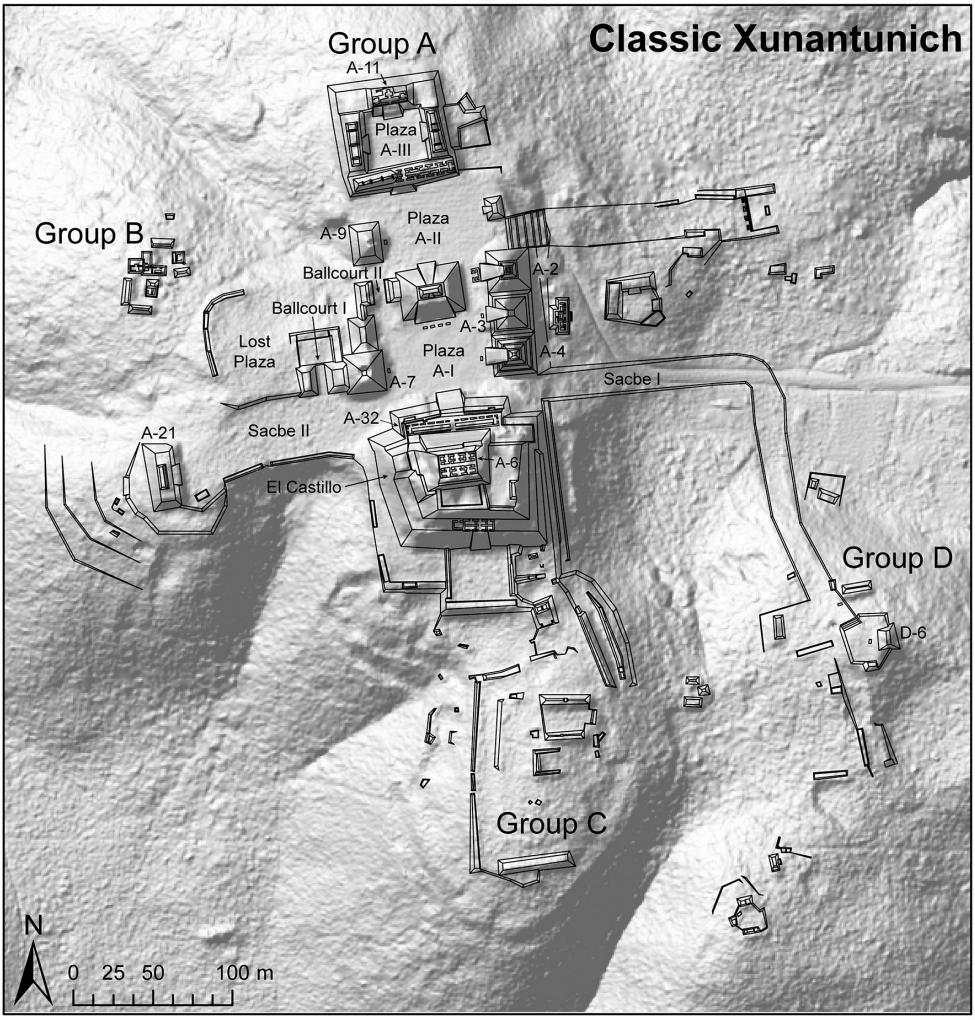

Figure 14.5. Map of Classic Xunantunich.

(Helmke et al. 2010; LeCount and Yaeger 2010b). One formal *sacbe* extends west from the foot of El Castillo toward a ball court, Structure A-21, the site's marketplace in the Lost Plaza (Cap 2017; Keller 2006), and an elite residential complex known as Group B (Thompson 1942). A second formal *sacbe* descends the ridge to the east and then turns south to climb to Group D, at the heart of which is a Late Classic funerary shrine, Structure D-6 (Braswell 1998; Brown et al. 2017; Lytle 2017; McCurdy et al. 2014). Group C occupies the ridgetop to the south of El Castillo. A lidar survey in 2013 funded by the Alphawood Foundation revealed that Group C is encircled by two rampart-and-ditch defensive features (Yaeger et al. 2016).

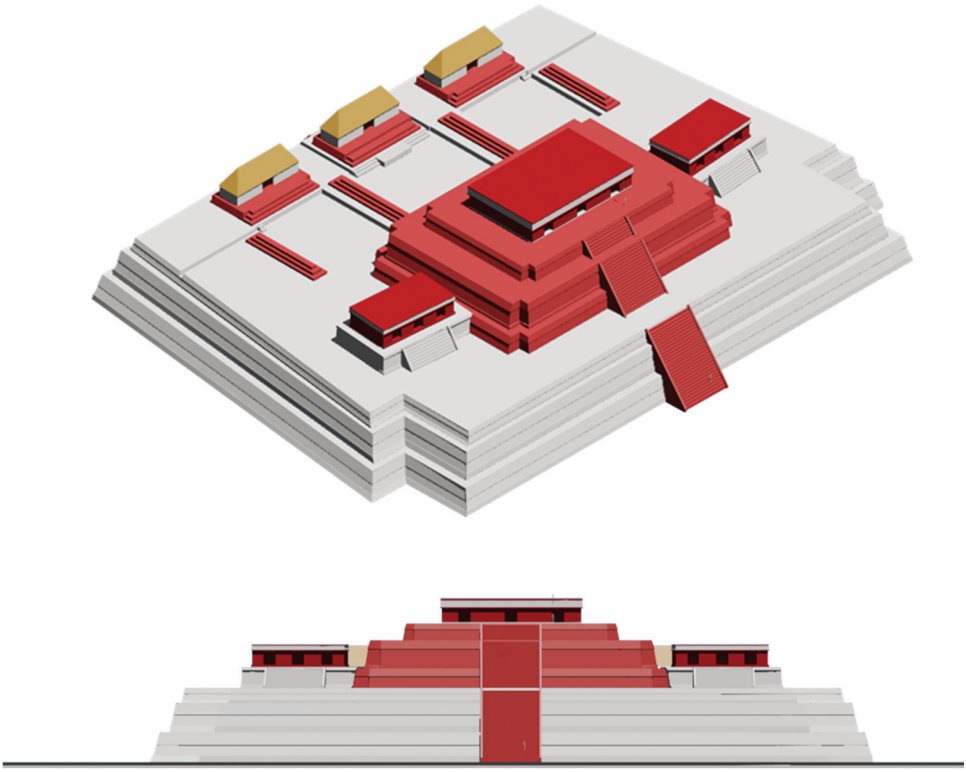

Plate 14.2. Reconstruction of El Castillo, Xunantunich, late in the Samal phase (from McCurdy 2016).

Judging from the volume of monumental architecture, Xunantunich's emergence as a major political center in the Mopan Valley occurred in the early Late Classic Samal phase (600–670 CE). While the presence of a modest, 2.2 m tall Early Classic platform buried deep under El Castillo suggests the possibility of earlier roots, a reconstruction of the acropolis's construction history based on soundings and tunnels suggests that nearly half of the accumulated labor investment in El Castillo dates to the Samal phase (McCurdy 2016). The result was a massive platform, 8 m tall with a footprint measuring 100 m by 75 m. Its summit supported vaulted rooms organized around patios at the core of which was a towering pyramidal substructure, Structure A-6 (Leventhal 2010; McCurdy 2016). Reconstructions by Leah McCurdy (2016) demonstrate these impressive building efforts (Plate 14.2). Richard Leventhal (2010) has argued that El Castillo was the seat of the Samal-phase royal court, integrating the royal palace, administrative compounds, and ritual structures.

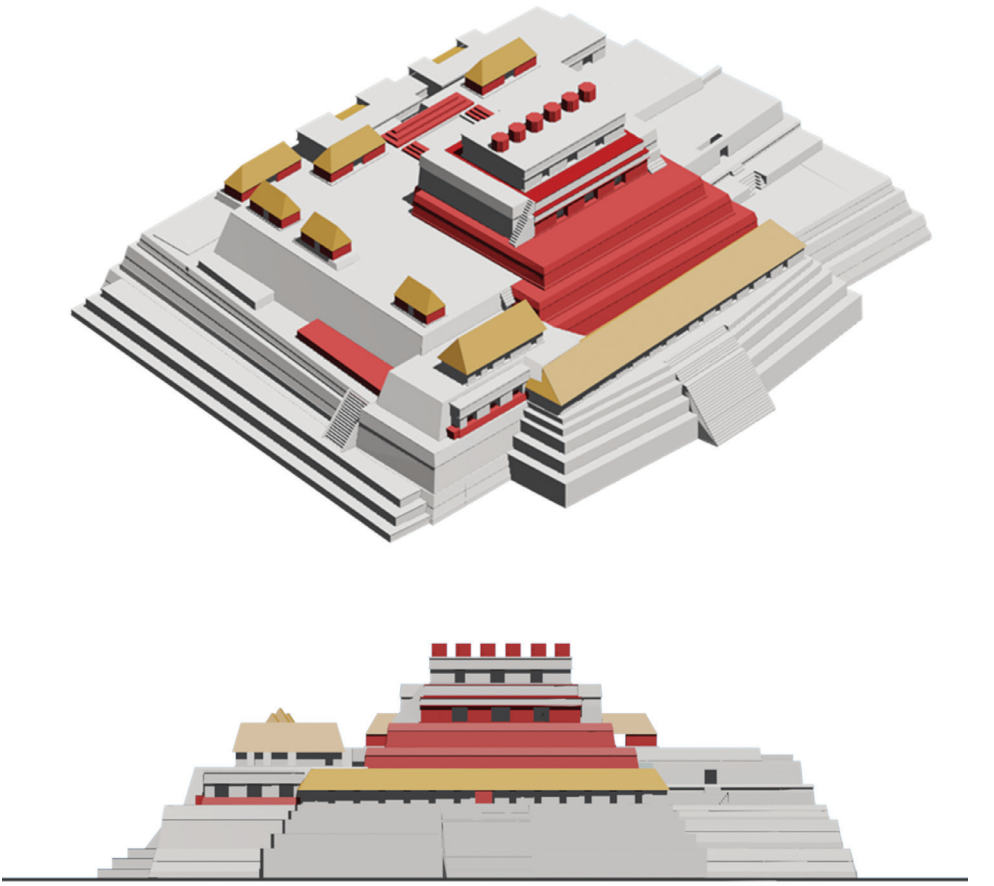

Plate 14.3. Reconstruction of El Castillo, Xunantunich, late in the Hats' Chaak phase (from McCurdy 2016).

In the following Hats' Chaak phase (670–780 CE), most of these courtyards and buildings were filled to raise the level of the acropolis 4 m to the Upper Terrace, leaving some of the outermost buildings of the earlier phases exposed to form the courtyards and platforms of the Medial Terrace, and Structure A-32 was appended on the north side of El Castillo, forming an *audiencia* that controlled access to the acropolis (Leventhal 2010). Structure A-6 was rebuilt, reaching a final height of 39 m above Plaza A-I (Plate 14.3).

Many of the other structures at Xunantunich show significant investment in the Hats' Chaak phase. The raised platform of Plaza A-III and the quadrangle of vaulted structures demarcating that plaza date to the Hats'

Chaak phase. Jason Yaeger (2010; see also MacKie 1985) interprets the Plaza A-III complex as the ruler's residential-administrative complex, with spaces for interacting with subjects, storing tribute, and possibly hosting visiting dignitaries, while including the ruler's residence, Structure A-11, and an ancillary complex to the east for food preparation in support of the ruling court. Yaeger argues that the construction of this complex in the Hats' Chaak phase signaled a political transformation at Xunantunich, from an independent ally of Naranjo to a subject province of the latter, and that this complex was the seat of a provincial governor (Yaeger 2010; see also LeCount and Yaeger 2010c). Although Leventhal (2010) argues that Structure A-6 was an ancestor shrine, the building's final two iterations have floor plans that resemble similar apical structures in Late Classic palaces at Naranjo and Holmul, leading us to agree with Jaime Awe (personal communication, 2016) that Structures A-6-2nd and A-6-1st were residential palaces. Accepting that Plaza A-III was the ruler's residential-administrative complex during the Hats' Chaak phase, we are left to ask who lived in El Castillo during the Hats' Chaak phase. One intriguing possibility is that it was the palace for the rulers of Naranjo when they visited this part of their realm.

From the Plaza A-III complex at the northern end of the site, a long plaza stretched south to the foot of El Castillo until the construction of Structure A-1 divided it into two plazas late in the Hats' Chaak phase. Along the eastern side of that plaza, Structures A-2 (Yaeger and Cochran 2017) and A-3 were built, and Structure A-4 was significantly expanded (Audet 2006). Along the west side of the plaza, Structure A-9 was constructed at this time. These pyramidal structures, together with Structure A-7, were all likely funerary monuments for the rulers of Xunantunich, given their pyramidal bases, small shrine superstructures, and the presence of a plain stela at the base of the stairway of each one. Discoveries by Gann (summarized in Jamison 2010) and Awe of rich burials in Structures A-4, A-7, and A-9 corroborate that. The richest of these was a large tomb that Awe discovered in Structure A-9. Radiocarbon dates, *Ajaw* dates on the vessels, and the ceramic assemblage are consistent with a date in the late seventh or early eighth centuries (Tilden et al. 2017).

Xunantunich reached its apogee in the Hats' Chaak phase. The site's marketplace was built in the Lost Plaza, as was Group B, the residential complex that lies just west of the marketplace. Most of the structures of Groups C and D also date to this period, as does the *sacbe* connecting Groups A

and D and the Northeast entryway that connected the site's main plaza with the valley to the east.

LeCount and Yaeger (2010a) argue that Xunantunich's rapid rise in the face of competing centers like Buenavista was due in part to an alliance between the polity's rulers and the much larger kingdom of Naranjo, an inference corroborated by fragments of fine polychrome vessels from Naranjo in the early levels of El Castillo and the similarities Wendy Ashmore (Leventhal and Ashmore 2004) identifies between the layouts of Naranjo and Xunantunich. These arguments for a close tie between Naranjo and Xunantunich were confirmed by the remarkable discovery by Awe of two large hieroglyphic monuments that Christophe Helmke and Awe (2016b) convincingly argue were *spolia* from Caracol. From the presence of these *spolia* at Xunantunich and companion pieces at Ucanal and Naranjo, they further infer that Xunantunich's rulers were allies who participated in Naranjo's successful conquest of Caracol in 680 CE (cf. Chase and Chase 2019).

The centrality of the *k'uhul ajaw* in the governing ideology at Xunantunich is epitomized by El Castillo. Xunantunich's plan is strongly quadripartite, with arms extending in all four cardinal directions (Keller 2006, 2010), and at the center of this cosmogram lies El Castillo, situated like a World Tree or sacred mountain at the axis mundi. Virginia Fields (2004) argues that the stucco frieze on Structure A-6-2nd depicts royal ancestors in a central role mediating the different realms of the cosmos, with World Tree deities associated with the building's four corners. A palace sits at the apex of this cosmological symbol, placing the royal family in the heavens and reinforcing the relationship between the rulers and the divine realm that forms the linchpin of divine kingship.

Discussion

Comparing the monumental landscapes of Early Xunantunich, Buenavista, and Xunantunich, described above, is instructive. The region's evolving political organization can be inferred from the decisions made by early rulers regarding how to organize these monumental sites, what kinds of structures to build, what kind of public art to commission, and what kinds of rituals to undertake in association with them. There are three major trends that have their beginnings at Early Xunantunich, are further solidified at Early Classic Buenavista, and, in turn, are amplified at Late Classic Xunantunich.

First, rulers increasingly emphasized the place of their ancestors at the symbolic center of the community. This may occur first with the Middle Preclassic burial in the middle of Early Xunantunich's E-Group, but the earliest clear example is the Late Preclassic formal burial chamber in Structure E-2-1st. As discussed above, this event represented the appropriation of the E-Group—a sacred place that had been a focus of communal solar rituals for generations—to serve as a place that also emphasized the veneration and commemoration of a particularly important ancestor.

The Early Classic urban renewal of Buenavista made the veneration of royal ancestors and associated political rituals the focus of the site's layout, remaking the Central Plaza to focus on the site's two pyramidal shrines; burying kings in the plaza and, later, in the adjacent pyramids; and erecting a series of stelae, which were symbolic of divine kings (Stuart 1996).

This trend continues with Late Classic Xunantunich. Its main plaza is larger than Buenavista's Central Plaza, dominating the site's layout in a way Buenavista's Central Plaza does not. All of the site's major buildings face the plaza, and the site's paved roadways all begin at the plaza's corners. Furthermore, most, if not all, of the buildings facing the plaza are intimately tied to rulers and their ancestors: the residential-administrative complexes of Plaza A-III and El Castillo at the north and south end of the plaza; the five funerary pyramids, which served as locations for venerating the rulers whose mortal remains they contained and who were likely referenced by the stelae erected at their bases; and the ball court.

Second, ceremonial space and thus, presumably, political ritual begins with a communal focus and through time becomes increasingly restricted as it crystallizes around rulers and their ancestors. At Early Xunantunich, the open plazas, broad ramps and stairways, and clear viewsheds to places of ritual importance, like the tops of the E-Group pyramids, all facilitate the direct or indirect participation of the entire community in the rituals conducted there. At Buenavista, the separation between the rituals occurring on the high pyramidal shrines and the viewers in the Central Plaza was increased by the height of the pyramids and the small, hidden interior spaces of the shrines. This same relationship was true of the pyramidal ancestor shrines at Classic Xunantunich. The separation between the rulers and their subjects was materialized in the built environment even more strongly at Xunantunich through increasingly restricted access as one moved through the various spaces to the residential complexes of the Plaza A-III complex (Yaeger 2010) and El Castillo.

Finally, we see a transition from a sacred landscape that emphasizes natural features to one that is focused on constructed features, particularly monumental buildings. It is instructive to juxtapose the Early Xunantunich monumental and sacred landscape at 250 BCE with the Late Classic monumental landscape a thousand years later at 750 CE. With its central public ritual space—the E-Group, anchoring a quadripartite cosmogram with hilltop shrines along its primary axes—the Late Preclassic sacred landscape embraced both natural landscape features and built features. As mentioned above, the open and unrestricted nature of these natural places and associated built features made them accessible to the broader community.

The Late Classic site plan of Xunantunich embodied that same quadripartite structure, replicating the layout of the cosmos, but all of the nodes in the landscape were built features. Xunantunich's Late Classic footprint was a great *k'an* cross or World Tree, three arms of which ended at long platforms and the fourth at a plaza: Structure A-21 to the west, reached by Sacbe II; Structure C-7 to the south, at the end of the ridgetop; the Group D plaza to the east, reached by Sacbe I, which incorporates a 90-degree bend so as to appropriate the preexisting sacred space of the Group D hilltop shrine; and perhaps Structure A-13-2nd to the north. At the center stood El Castillo, the most restricted architectural space at Xunantunich, an architectural symbol of a sacred mountain (McCurdy 2016), capped by Structure A-6, which was marked as a World Tree by its iconography (Fields 2004).

Ancient sacred places like Early Xunantunich's eastern and western hilltop shrines and Structure E-2 in its E-Group as well as other Preclassic ritual nodes like SL-13 Structure 7 at the nearby hinterland community of San Lorenzo were recognized by Classic-period people and incorporated into their ritual worlds. But they were understood through the political lens of a different era and appropriated to different ends. By the Late Classic period, the sacred landscape was a thoroughly political landscape, transformed so that its center emphasized rulership on an awe-inspiring scale.

Acknowledgments

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Archaeology was essential to our research, particularly John Morris, Alan Moore, Melissa Badillo, Sylvia Batty, and Antonio Beardall. We extend special thanks to the staff, students, and crew of both the Mopan Valley Archaeological Project and Mopan Valley Preclassic Project. In particular, our interpretations draw heavily on excavations supervised by Bernadette Cap, Victoria Ingalls, Whitney Lytle, Leah McCurdy, Zoe Rawski, and Alessandra Villarreal. Joseph Ball and Jennifer Taschek generously shared unpublished data from their earlier research at Buenavista del Cayo. Finally, we thank the editors and anonymous reviewers for their comments and suggestions.

15

Capturing the Forest

Ancient Maya Ritual Caves as Built Environments

HOLLEY MOYES

Throughout ancient Mesoamerica the natural landscape played a prominent part in religious thought and action. Mountains, caves, waterholes, ravines, boulders, and trees were fundamental in shaping ancient cosmologies, grounding supernatural realms in real-world environments, and linking mythic realms to natural features (Brady and Ashmore 1999; Stone 1992; Taube 2004). Connections between the natural and supernatural domains were played out in cosmology and myth, ritual practices, iconographic renderings, and the built environment. James Brady and his colleagues have long argued that, similar to other Mesoamerican peoples, the ancient Maya held the earth itself to be a sacred animate force with mountains and caves serving as homes for deities fundamental to human well-being (Brady 1989, 1997; Brady and Ashmore 1999:124; Brady and Prufer 2005).

Given the salience of the landscape in Maya belief, it is hardly surprising that natural caves were employed as ritual venues that instantiated Maya cosmology and provided a setting for ritual performance, literally harnessing the power of the landscape itself. While beliefs about caves are very well documented ethnohistorically and ethnographically, few ancient written sources refer directly to cave rites (Helmke 2009:523), so a great deal less is known about the rituals that occurred in and around these sites. However, based on the archaeological record itself, the ancient Maya began to conduct cave rituals beginning in the Early Preclassic period (1200–1100 BCE) with the advent of settled village life (Moyes 2006a, 2006b; Moyes et al. 2009). Cave use continued through the Classic period into the contact era, although Postclassic use was rare in the Eastern Lowlands where populations were markedly reduced (Moyes et al. 2017).

Remains in caves provide archaeologists with an unambiguous context for understanding the ritual life of ancient Maya people and allow us to evaluate changes in ritual practice over time (Moyes 2006a; Moyes et al. 2009; Woodfill 2010). Cave archaeologists strive to understand how and when these sites were used, who used them, and how caves could be manipulated in political contests for the acquisition and maintenance of power. While the use of space is a consideration in cave studies (Kenward 2005; Moyes 2005; Moyes, Hernandez, et al. 2015; Stone 2005), there has been little discussion of how caves were structured as built environments.

Building on the ethnographic work of Willian Hanks (1990) in Yucatan as well as others, Andrea Stone (1992) argues for a structuralist approach in understanding the relationship between the natural landscape and the built environment, an argument also espoused by Karl Taube (2004:69; 2003). According to Hanks (1990:306–307), there is an opposition between "town or inhabited space" (*kaah*), which is structured, ordered, and safe, and "forest" (*kaash*), which, although it is considered to be chaotic, wild, and dangerous, is the seat of supernatural power and the abode of spirits. Stone (1992:116) contends that elites attempted to "capture" the power of the primordial wilderness in their architectural constructions in urban centers. Research conducted in caves over the past 20 years suggests a corollary to this principle—that architectural constructions and artifact deposition in natural caves served to domesticate or "tame" these otherwise spiritually chaotic and dangerous wilderness places.

In this chapter, I discuss how architectural features in caves structure natural environments to create humanized space for ritual performances, thus allowing archaeologists to better understand the nature of cave ritual and its relationship to social processes. Using data collected by the Belize Cave Research Project and the Las Cuevas Archaeological Reconnaissance, I discuss patterns in architectural modifications to natural caves. I begin by considering the meaning of caves within Mesoamerican cosmologies and discuss their role in Maya thought and ritual practice. In conclusion, I provide a case study from the cave at Las Cuevas. Here I argue that the site was a constructed ritual landscape whose architectural elements evidence large-scale collective action during the tumultuous Late Classic period.

Landscapes, Cosmologies, and Caves

The importance of the natural landscape is one of the main tenets of Mesoamerican cosmologies that have been noted and studied cross-culturally

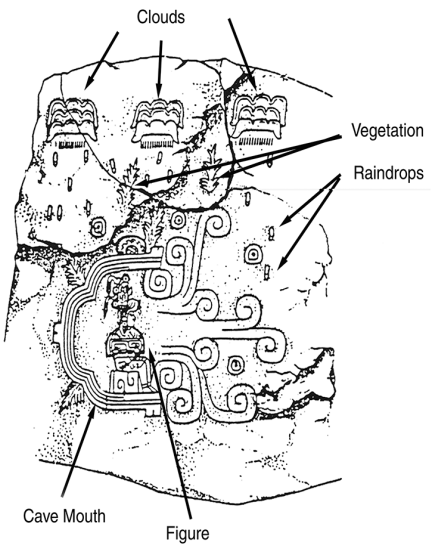
by ethnographers, ethnohistorians, art historians, and archaeologists (see Brady and Ashmore 1999; Farriss 1984; García-Zambrano 1994; Heyden 1975; Mautner 2005; Moyes and Brady 2005, 2012; Palka 2014; Prufer and Brady 2005; Schávelzon 1980; Stone 1995; Taube 2003; Townsend 1982; Vogt and Stuart 2005). Features of the landscape such as mountains and caves are reproduced in monumental architecture, illustrated in iconography, and featured in mythical narratives and folktales. Cave entrances are often illustrated as toothy U-shaped mouths that link the underworld interior of the mountain to the earth and sky. Doorways in temple architecture are adorned with the toothy zoomorph, marking the structure as a sacred mountain with its cave entrance (Figure 15.1a; Schávelzon 1980). Interestingly, this convention reflects nature's reality. Cavers can attest that many cave entrances are decorated with stalactites that hang from the edge of drip lines. When viewed from the inside looking out, they indeed resemble teeth lining a gaping mouth. Anyone who has stood inside of the entrance of Actun Isabella in western Belize could not help but feel that they are peering out of a monstrous maw (Figure 15.1b).

A well-preserved illustration from early art, known as the El Rey monument, is a bas-relief carved into a boulder at the site of Chalcatzingo in Morelos that is thought to date between 1200 and 200 BCE (Figure 15.1c). The image depicts a ruler or ancestor sitting on a cloud scroll within a U-shaped toothy cave mouth (Angulo 1987:135–138; Reilly 1994:78–79). Mist or smoke emanates from the entrance, and clouds rain on the scene. This is a compelling interpretation because clouds or mist can be seen emerging from cave entrances, particularly after rains. Alternatively, Taube (2004:90) has suggested that the image is an early depiction of Flower Mountain and that the volutes emitting from the cave entrance represent breath. This makes a good deal of sense when we consider that caves do in fact "breathe." The air pressure system in large caves is always seeking to maintain equal pressure with the surface, which produces this effect that can be quite dramatic to witness.

The ideological nexus between caves, rulers, rain, and fertility is unmistakable in the El Rey relief and is echoed in later Maya images such as the painting on the north wall of the San Bartolo murals (Saturno et al. 2005). These murals were very well preserved and date to approximately 100 BCE. The figures in the painting are staged within an anthropomorphic maw with a stalactite-shaped fang hanging from the entrance, representing an upper tooth or fang. A woman presents tamales to the maize deity, who stands with a gourd of water in hand. Taube and his colleagues (Saturno et

a

b



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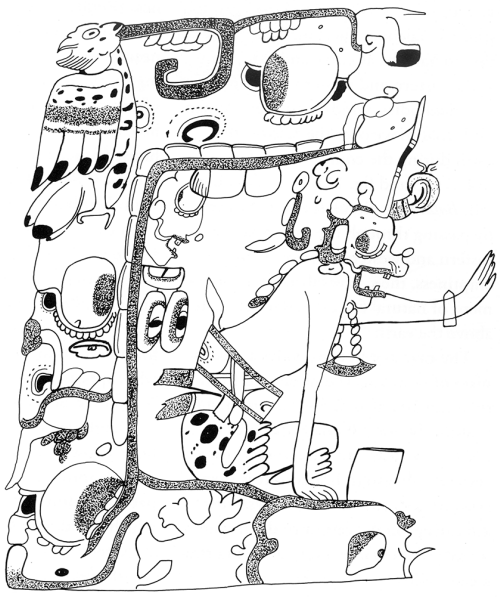

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Figure 15.1. (*a*) Façade at the site of Chicanna; (*b*) Actun Isabella cave mouth viewed from interior (Photo by H. Moyes); (*c*) El Rey monument (after Reilly 1994:85); (*d*) Chac the rain deity is depicted sitting in his cave/house on a Classic period vase (Coe 1978:78, no.11).

al. 2005) describe this as a primordial scene depicting the mythic birth of humans and sustenance emerging from the Flowering Mountain cave.

Hundreds of years later the Aztecs illustrate similar themes of human emergence from a toothy maw, as, for example, depicted in the Codex Durán (Durán 1994:Plate 3). This image shows humans exiting the cave entrance carrying bottle gourds in one hand and bows and arrows in the other (see Saturno et al. 2005:48 for discussion). The associations with water, fertility, and ancestral emergence provide a framework for understanding how natural features are thought of and how resilient cosmological ideas grounded in the natural landscape have been over time and space.

It has long been established that ancient Mesoamerican people conceived of a vertical world consisting of three components: the sky, which is the realm of the ancestors; the four-sided earth that is the abode of humans; and the world beneath—the underworld (Bassie-Sweet 1996; Freidel et al. 1993; Thompson 1970:195). In the vertical cosmos, the sky and the underworld are thought to be composed of multiple levels. Most Central Mexican people at the time of the Spanish Conquest conceived of the sky as consisting of 13 layers and the underworld of nine (Miller and Taube 1997:177).

Although there is considerable variation among modern Maya regarding cosmological conceptualizations, data suggest that cave entrances are thought to be both entrances to the netherworld associated with evil forces as well as entrances into the earth where Earth Lords and rain gods abide (see Moyes 2012 for discussion). In modern Maya thought, earth and rain deities are associated with transitional areas between the earth and sky or underworld, whereas the malevolent underworld denizens reside primarily in the lowest levels of the underworld. As John Sosa (1985:424) notes, among the Yukatek Maya, "the subterranean level of the cosmos is not really completely distinct from the earth but is conceived to be within it." William Holland (1962:94–96), working among the Tzotzil, reported that the sky is thought to have 13 levels and the underworld nine. Humans live in the bottom two levels of the sky and earth deities are located within the sky's lowest level. The ninth level of the underworld constitutes Olontik or the "Land of the Dead." This is similar to Hanks's (1990:304) report that the sky is seen as having seven cloud layers, but people inhabit an area "inside above Earth," which includes the surface of the earth and the area below the cloud layers. This differs from Gary Gossen's (1974:21) account of the Tzotzil of Chamula, who envision the sky as having three concentric layers and the underworld as a single layer supported by Miguel, the Earth Bearer. Gossen (1974) reports that caves are considered part of the earth,

although they are associated with water, dampness, darkness, and lowness, suggesting that they are in fact transitional zones between the earth and the underworld.

In Highland Guatemala, caves represent portals to the underworld and are inhabited by the human dead as well as liminal beings from other world orders or past creations (Christenson 2008:108; Cook 2000:164). It has long been argued that caves are referenced in the Popol Vuh, an ethnohistoric version of the Maya creation myth, as the entrance to the road to Xibalba, where the Hero Twins travel deep within the earth to encounter the Lords of the Underworld, evil supernatural beings that represent death and disease (MacLeod and Puleston 1978). According to the story, Hun Hunahpu, the father of the Hero Twins is transformed into the maize god and left ever to dwell in the underworld, cyclically emerging each growing season into the earth realm as the maize plant (Christenson 2007).

Aside from their underworld associations, caves are considered to be the domain of "Earth Lords" who oversee rainmaking and agricultural fertility in some ethnographic accounts (Gossen 1974:21; Holland 1962:126–129; Scott 2009; Vogt 1976:16; also see for discussion Brady and Prufer 2005:366–367). Among the Q'eqchi' of Alta Verapaz, the indwelling earth spirits or Tzuultaq'as (meaning, literally, "mountain valley") are thought to live in caves (Wilson 1990:69, 98). Many of these Earth Lords are responsible for producing rain. For example, at Zinacantan in Chiapas, the Earth Lord is associated with specific openings into the earth such as caves, sinkholes, or waterholes (Vogt 1976:16–17). This being lives underground and controls lightning and clouds that emerge from caves to produce rain for crops.

Chac, the Maya rain deity is depicted on a Late Classic period vase where he sits in his cave house (see Figure 15.1d; Coe 1978:78, no. 11). Similar depictions are found in the Dresden Codex on pages 30a and 67b (Bassie-Sweet 1991:91–95) and the Madrid Codex on pages 29 and 73 (Bassie-Sweet 1996:98–103). A reified example was found at the cave of La Pailita in Guatemala where a life-sized sculpture of Chac sits on his throne in the cave's interior (Graham 1997b).

Architecture in the Underworld

Although we have been aware of the presence of architectures in caves for at least 100 years (Mercer 1975), there have been few studies that have considered their implications (for exceptions, see Brady 1989; Moyes 2012; Rissolo 2001, 2005). Yet architectural features are found in roughly half of all cave

sites. For instance, in his survey of the Maya mountains in Belize, Keith Prufer (2002) notes that in the Muklebal Tzul valley there were constructions in 10 of the 24 cave sites surveyed. Dominique Rissolo (2001:365) observed formal ceremonial architecture in Maya caves in Yucatan, including a pyramidal structure at the cave of Actun Toh. In a 2005 survey of 53 cave sites throughout Belize, the Belize Speleothem Project found that over half the caves visited contained some form of architecture (Moyes et al. 2006). Of the caves surveyed during the Minanha Ha Cave Project in western Belize, seven of the 12 caves visited contained architectural features (Moyes and Awe 2011).

The Belize Cave Research Project, a multiregional project under the direction of Jaime J. Awe (Northern Arizona University) and myself, has been recording architectural features in caves throughout the region since 2011. Although the project is open-ended and ongoing, to date we have visited 75 sites, of which 25 were chosen for intensive recording and analyses. Of all the sites visited, the project found architectural features in 39.

Cave architecture is typically informal, consisting of dry-laid cobbles or boulders, or constructions may be more labor intensive, using chinked masonry. Rarely do we find cut stone in caves; rather, materials such as natural limestone cobbles and small- (volleyball-sized) to medium- (@ 0.50–1 m) sized boulders native to the site are employed opportunistically. Often speleothems such as stalactites, stalagmites, or spalls are incorporated into the constructions. They are infrequently held together with mud mortar, and the most formal constructions are finished with plaster. Features include walls, doorways, blockages, terraces, steps, platforms, and anomalous features. Constructions may provide structure for ritual performance by defining space, may be cues that signal proper etiquette, or may echo cosmological ideals. Walls, blockages, and platforms separate performers from observers and can serve to enhance or occlude sight lines. These and other features may channel movement, force changes in body posture, or create focal points (Kenward 2005:256). Walls are used to create enclosed spaces or limit accessibility by closing off alcoves and niches or blocking rooms or tunnels.

It is commonly thought that walls obstructing cave entrances were erected to create dark zones in their interiors, but this does not seem to be the case. For instance, Bird Tower Cave in the Chiquibul Forest; Alvin's Cave in northern Belize; Actun Tsek' (Skull Cave) and Actun Chapat (Centipede Cave), both in the Macal Valley near the site of Minanha at Actun Am Actun (Cave Spider Cave) in the Mountain Pine Ridge near

Augustine village; and Las Pinturas Cave near Flores in Guatemala all have well-constructed walls at their entrances that are at least 2 m in height but do not extend to the ceiling, allowing light to pour over the top into the interior of the cave (See Moyes 2012:34, Figure 11). Rather, these walls would have restricted the entrances, channeled movement, occluded vision, and diminished sound. Walls blocking entrances to tunnels often have constructed doorways that can be opened and closed using loose rock. These doorways are small, requiring participants to bend or crawl, and allow only one person at a time to pass through.

There is an interesting variation on walled entrances in which a tunnel is partially occluded with speleothem formations. A formal wall occludes large areas of the opening, and a very small crawl space is constructed to the side forcing one to squeeze through on their belly. These are located not just at entrances but deep within tunnel systems as well. Excellent examples are found at Actun Sayab ʻAk (Watervine Cave) and Tush Ku Bin Kin Actun (Sunset Cave) in the Macal drainage and at the entrance to Alvin's Cave in northern Belize.

Blockages are less formal than constructed walls consisting of loosely piled limestone boulders. Like walls, these constructions also serve to channel movement or block visual or physical access. Many caves have blocked entrances that force ritual participants to crawl into them. Moth Cave, Numyaj Naj (House of Pain), and Lubuul Actun (Fall Down Cave) in the Macal drainage near the site of Minanha are excellent examples (Moyes 2012:5, Figure 2; Moyes and Awe 2011:152–153). The entrance to Chechem Ha was reported to have been blocked with large boulders that were removed upon the cave's discovery (Moyes 2006a:200).

Terrace constructions consist of retaining walls that level slopes. This is one of the most common architectural features in caves, prevalent in both large and small sites with sloping entrances. In fact, terracing is almost ubiquitous in these caves. Terraces of monumental scale and constructed of large boulders spanning the cathedral-like entrances and descending to the cave floor are found at the entrance of Tan Che Actun (House Beam Cave) and in Yax Moch Actun (Green Frog Cave) in the Mountain Pine Ridge. In the Chiquibul Forest Reserve, terraces span the entrances of Bird Tower Cave and K'in Kaba Actun (Birthday Cave), and in the Macal drainage near the site of Minanha, three large terraces span the east side of the entrance of Actun Isabella descending to the cave floor (Moyes and Awe 2011:145–146). Stairways typically run down the center of the terraces or flank their sides,

creating ease of access. Flat, wide terraces may have been used in ritual performances or processions.

Many caves feature platforms that were likely to have functioned as performance spaces. We might even think of these as "stages" or points of focus within a larger space. In some caves, platforms overlook large areas, suggesting that they could be used for oration or spectacle. These are found in many sites, but good examples are located in the caves of Luubul Actun in the Macal drainage, Ch'en P'ix (Cave of the Awakening) in the Vaca Plateau, and Yax Moch Actun in the Mountain Pine Ridge area. Larger platforms often show evidence of burning on their surfaces, such as on Platform 1 at Yax Moch Actun. Most impressive are formal plastered platforms, a regional variation in cave use found primarily in the area surrounding Las Cuevas in the Chiquibul Forest Reserve (Moyes 2012; Moyes, Robinson, et al. 2015).

Smaller platforms may have served as altars. For instance, Pierre Robert Colas excavated (Colas et al. 2000) a waist-high platform in the cave of Ch'en P'ix. The feature consisted of a retaining wall with a tamped, flat surface measuring 1.6 m × 2.4 m., surrounded on three sides by the cave wall. Colas interpreted the feature as an altar because of the number of artifacts located on the surface.

Some basic observations can be made regarding patterns in cave constructions. First, most cave architecture is found in the entrance chambers or light zones of caves, although walls and blockages that force one to crawl from one area to another can be located deep within the tunnel system. Rarely is any other architectural feature located in the deeper cave areas.

Entrances to tunnel systems are often walled or blocked off, limiting access to dark zones, which suggests that cave ritual consisted of publicly accessible rites as well as more esoteric less accessible private rites, an observation made by James Brady (1989) in his work on Naj Tunich cave. When we consider cosmological models of the multilayered universe, it stands to reason that cave entrances represent a liminal zone between the earth and underworld. Entrances and exteriors may have functioned as "safe" or more humanized space as one prepared to enter the darkness and "chaos" of the tunnel system and the powerful spiritual realm. Therefore, walls and blockages at cave mouths and entrances to tunnel systems likely marked gateways to the spirit world. It is telling that they were "opened" and "closed." Due to the informal nature of "closing" a doorway using a few loose rocks, it is improbable that this practice was designed to keep people

out. It is more likely that "closing" a cave was a symbolic act designed to contain the powerful spiritual forces located therein. The containment of spirits both beneficent and malevolent is a hallmark of shamanic practice, well documented by Hanks in Yukatek ritual (1990:336–337).

Blockages within the tunnel systems were likely to mark gateways to deeper and more spiritually hazardous levels of the netherworld. As a participant moves though the cave, architectural features channel movement and force changes in bodily position, creating a temporal/spatial experience. Borrowing a metaphor from Michel de Certeau (1984), as one moves through the cave, modifications contribute to the creation of a "spatial story" that produces a time/space narrative for the participant. This narrative was shaped by the interactions of cognitive processes and cultural learning, enhanced, and reinforced by cues in the natural and built environment. Therefore, cosmologies, architecture, and performance amalgamate to create ritual drama producing an intense religious experience for participants in cave rites. It is through these ritual practices that the spiritual power—the wild and chaotic forces of the "forest"—can be harnessed.

The Cave at Las Cuevas: Capturing the Landscape

Las Cuevas is a small- to medium-sized surface site located in the Chiquibul Forest Reserve in western Belize located approximately 14 km east of the mammoth site of Caracol as the crow flies (Figure 15.2). It has been investigated by the Las Cuevas Archaeological Reconnaissance project under the direction of Holley Moyes since 2011. The site consists of 26 structures that include temples; a palace; long, linear constructions; and a ball court, all organized on an east–west axis facing two plazas, Plazas A and B. (Figure 15.3). Its layout is somewhat unusual because it surrounds a dry cenote or sinkhole that leads to the entrance of an extensive cave system running beneath the surface architecture (Plate 15.1). While it is not unusual for Maya sites to be associated with caves, we rarely see such a direct connection or such an extensive tunnel system beneath a site core (Moyes and Brady 2012), and although many cave sites contain architectural modifications, none compare to the cave beneath the site of Las Cuevas.

The mouth of the cave sits directly below the eastern building (Str. 1) in Plaza A. It is one of the largest structures at the site, standing 11 m in height. Our excavations suggest that the temple was constructed in four to five phases, all dating to the late part of the Late Classic period (Carpenter 2014; Robinson 2013; Robinson et al. 2014). The building may have

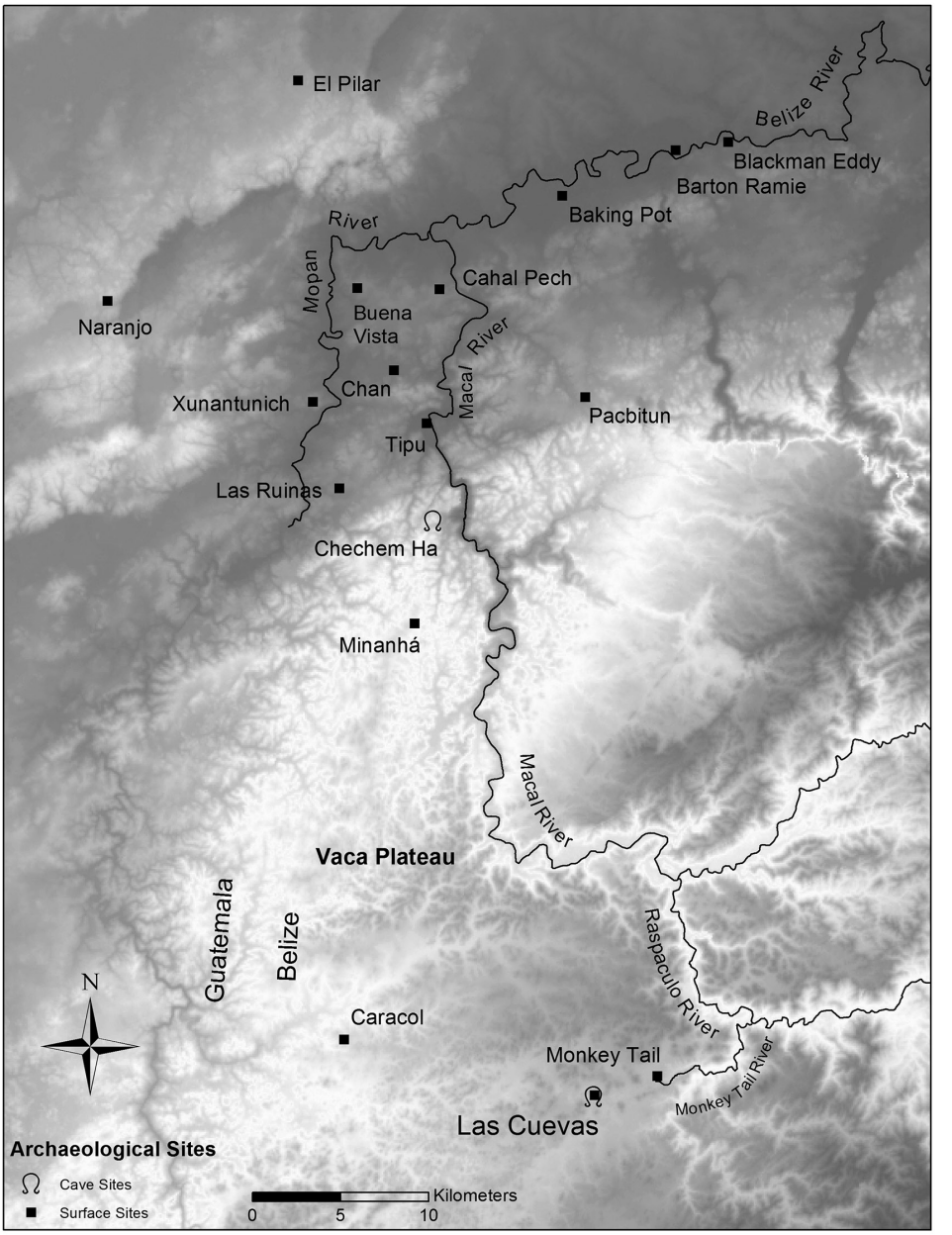

Figure 15.2. Map of western Belize showing location of Las Cuevas (courtesy of LCAR).

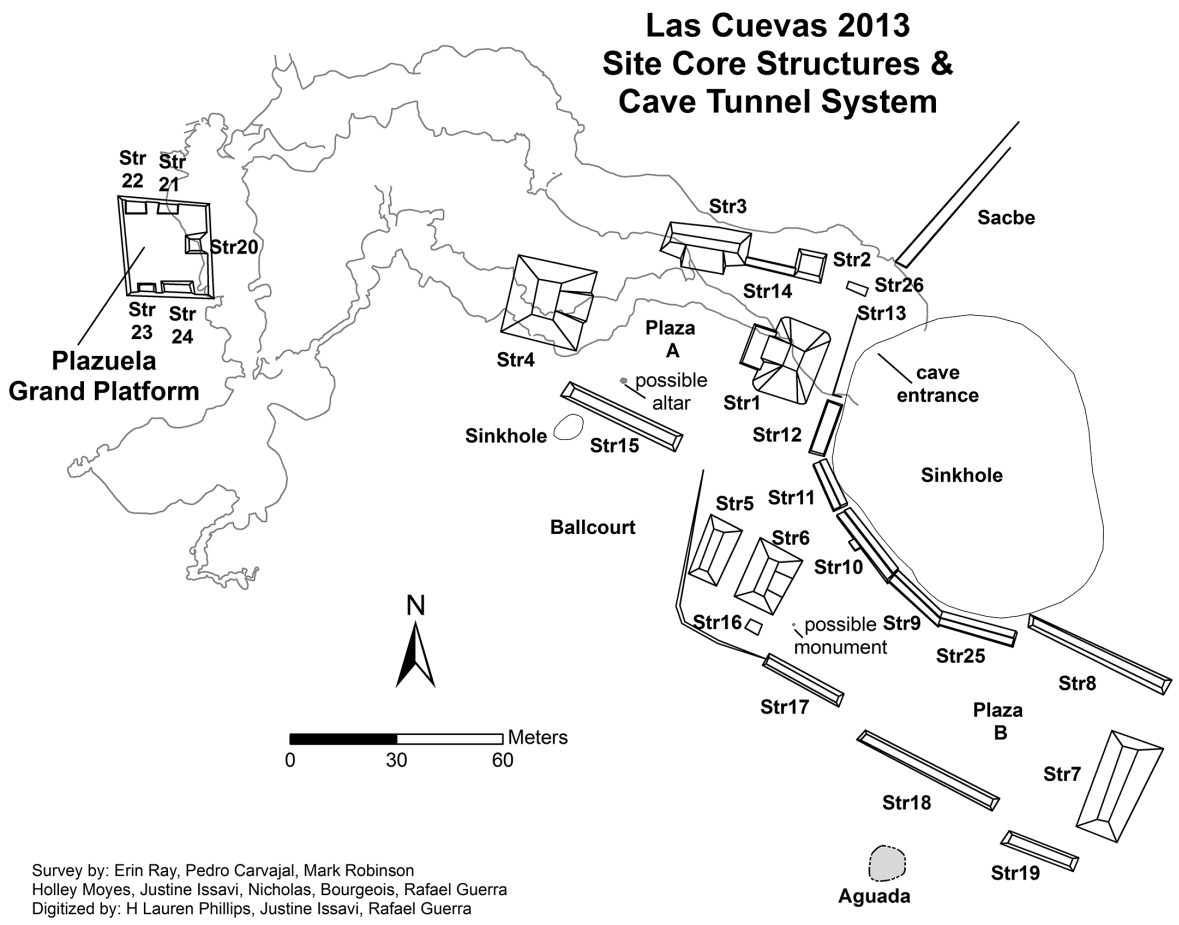

Figure 15.3. Map of Las Cuevas site core showing location of Structure 3 and Plazas A and B (Courtesy of LCAR).

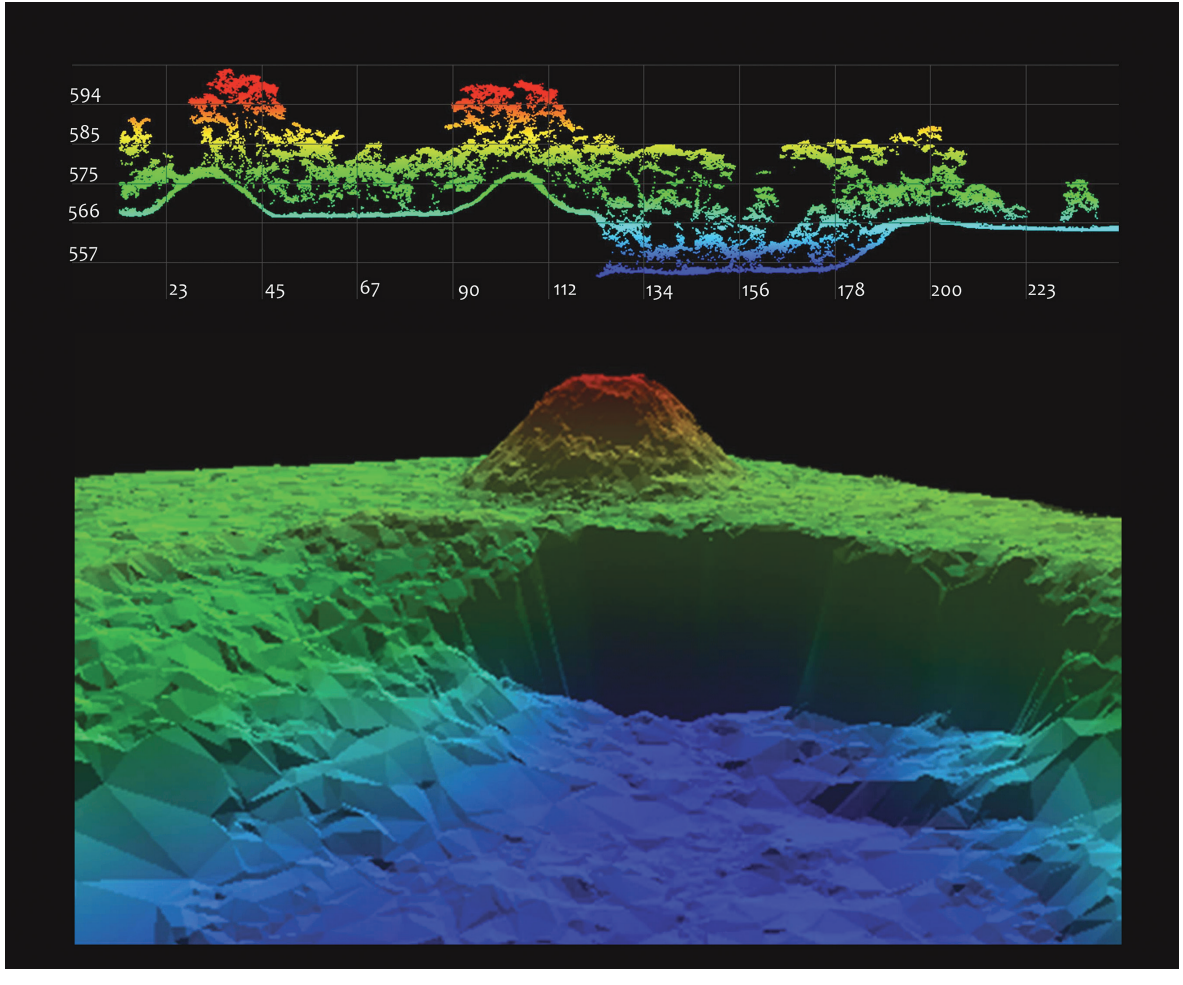

Plate 15.1. Lidar image of the Las Cuevas cave and surface site.

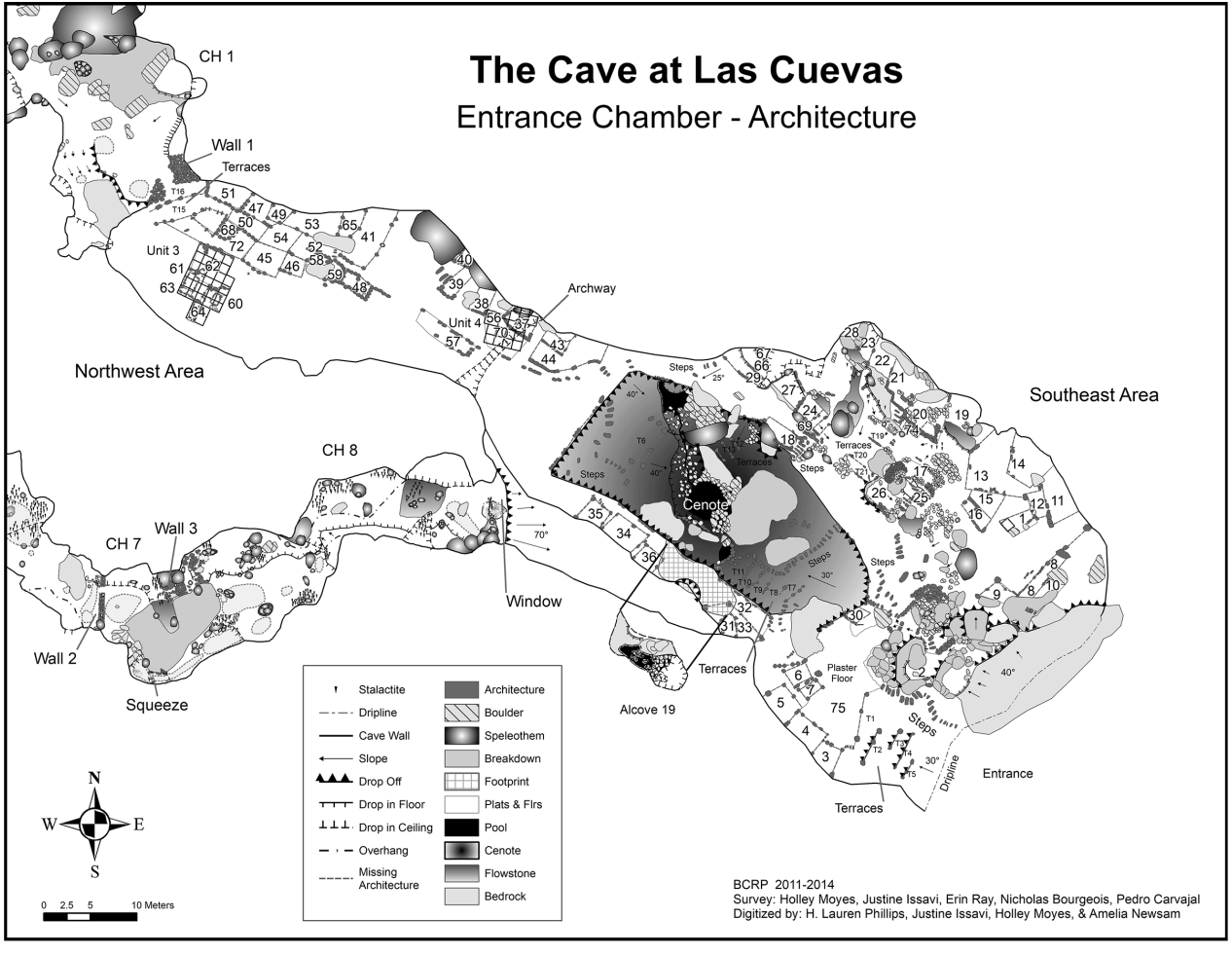

Figure 15.4. Map of the Entrance Chamber with architectural features.

been terminated, as evidenced by a large marl deposit chocked with sherds dating to the Spanish Lookout ceramic phase (CE 700–900) that blocked access to the rooms on the top of the structure. Interestingly, the building's earliest phases rested on huge limestone boulders with speleothems from the cave packed between them (Carpenter 2014:21). Our excavations uncovered 151 pieces of molded stucco in the collapse material in the top levels, indicating that a stucco frieze had adorned the upper doorway in the final building phase. The stucco pieces included round elements; smooth, curved elements; and a conical piece that is clearly a giant tooth, suggesting the frieze represented the maw of the *witz* or "earth" monster. Although we have not been able to reconstruct the entire element, the *witz* motif identifies Str. 1 as a sacred mountain.

The cave's massive mouth measures 28 m wide and 9 m high. On the summer solstice in 2014, a particularly hot and humid day, the cave produced a cloud of mist that wafted out of the entrance. This almost magical event conjured iconographic images such as the El Rey monument and reminded us of the realities underpinning ancient Mesoamerican ideational beliefs regarding the sacred landscape and the animate world.

The dramatic Entrance Chamber is a cathedral-like space measuring 108 m in length, 40 m in width, and 17 m in height. The chamber is heavily modified with monumental architectural constructions including terraces, retaining walls, stairs, and platforms (Figure 15.4) that are covered with layers of thick plaster (Moyes, Robinson, et al. 2015; Ray 2017). In the center of the chamber dividing the north and south areas is a cenote with an underground river that surfaces at its base with clear running water that rises during heavy rains. Currently the water is pumped out of the cave for use at the nearby Las Cuevas Research Station. The sinkhole is lined with retaining walls composed of cut stone blocks, and four stairways, at least one of which was plastered, that descend to the river. Terraces and platforms line the sinkhole's interior, indicating that ritual performances occurred within the cenote near the water.

Formal plastered platforms connected by stairways surround the cenote, fanning out in an amphitheater-style configuration reaching upward toward the outer walls in the southeast area. Platforms are also found in the north end of the chamber leading up to a constructed wall (Wall 1). Thus far, based on mapping and excavations, the project has located and identified 75 individual platforms and floors. The combined area of platform space is 606 m^2, with an average individual platform measuring 8.1 m^2. Therefore, based on calculations using Jerry Moore's (1996:147) estimated

space per person for public plazas for more (0.46 m^2) or less (1 m^2) crowded conditions, the platforms could have accommodated between 608 and 1,317 individuals. While Takeshi Inomata (2006a:816) reports much higher estimates for open plazas at surface sites, the data suggest that the cave was used for large, well-organized ceremonies that could support a large number of ritual participants.

Some platforms formed complexes consisting of several tiers, reminiscent of a wedding cake, with the largest tier at the bottom and one to two smaller platforms on top. It is currently unclear if these constructions were built in single phases, although replastering obviously occurred in some areas, as evidenced by visible separations between burned and stained floors. Micromorphology indicates that the plaster surfaces were at one time painted red (Ray et al. 2018). In her geochemical research on eight of the platforms, Erin Ray (2017) determined that there was a great deal of variation between each of the plaster "recipes." She suggests that platforms may have been constructed in an accretionary manner over time and that temporal variation could account for the differences in the materials.

At the northwest end of the chamber, the light zone fades to twilight and into darkness. Platforms and stairways in the rear of the entrance abut terraces leading to the walled entrance to the tunnel system. Wall 1 completely occludes the passage. A formal entrance or "doorway" measuring 0.75 m in width and 1.1 m in height forces one to bow or duck when entering Chamber 1. Loose limestone boulders strewn on the exterior of the wall suggest that the entrance was blocked or "closed" with loose rock at some point in the past.

Beyond Wall 1 is the main tunnel system, measuring 335 m in overall length. It comprises 10 rooms and passages that circle around on themselves and terminate in a window 8 m above the floor on the west wall of the Entrance Chamber. As one moves through the system, one encounters two additional walls, three blockages, and a natural morphological restriction (Figure 15.5). Blockages force participants to crawl on their hands and knees between chambers. The second wall (Wall 2) spans the tunnel reaching from floor to ceiling and has a small constructed doorway. The wall is composed of small to medium limestone boulders and speleothems held in place by mud mortar. The mud contains large amounts of charcoal, suggesting that it was collected from the cave floor. The third wall (Wall 3) is the final construction as one moves through the system. Here the chamber is divided by breakdown (fallen rock). To the north of the breakdown is a

wall composed of well-laid small- to medium-sized limestone boulders that completely occluded the large passage before looters broke it open. This wall served to force ritual participants to enter the next and final chamber of the journey (Chamber 8) via a small constructed muddy crawlspace (Blockage 3) on the south side of the chamber.

At the end of the tunnel system is Chamber 8. The tunnel terminates with a sheer drop-off from a window overlooking the Entrance Chamber. From this vantage point one can view the cave mouth and cenote as well as the platforms and terraces on the southeast side. During the day, light can be seen pouring into the entrance. The acoustics are quite impressive from the window, and even a soft voice may be heard on the east platforms. One can imagine a grand oration being presented from this high vantage point.

Although some caves have larger architectural features and perhaps greater labor investment in terms of the formal characteristics, spatial organization, and ideational characteristics, Las Cuevas makes the strongest statement of ancient Maya cosmological principles and creates the most salient backdrop for ritual performance of any known cave site in the Maya Lowlands. The site's architectural layout and incorporation of natural features created a cosmologically charged space that reified the mountain/cave/water complex at the heart of Maya ideology and was clearly designed to sanctify the rites and ceremonies that occurred within those precincts. When we consider ancient Maya cosmologies, we only imagine the grandeur, wonder, and awe that would have accompanied participation in ceremonies at Las Cuevas set against the backdrop the sacred mountain perched atop the natural cave with its interior water source.

Whether one joined in the collective rites with hundreds of others in the Entrance Chamber or undertook the ritual journey through the wilderness and chaos in an underworld descent through the dark tunnels to emerge triumphant into the light, the ritual experience would have left an indelible mark. Architectural features would have enhanced the experience by bringing human order to the chaotic underworld wilderness, providing a place of liminality in the Entrance Chamber. Walls and blockages in the tunnel system would guide the participant through the dark passages, providing a roadmap to the underworld journey. This kind of intensive shared experiences are what Harvey Whitehouse (2004:105) would refer to as an "imagistic" mode of religiosity—"personally consequential, extraordinary, emotionally arousing"—and long remembered.

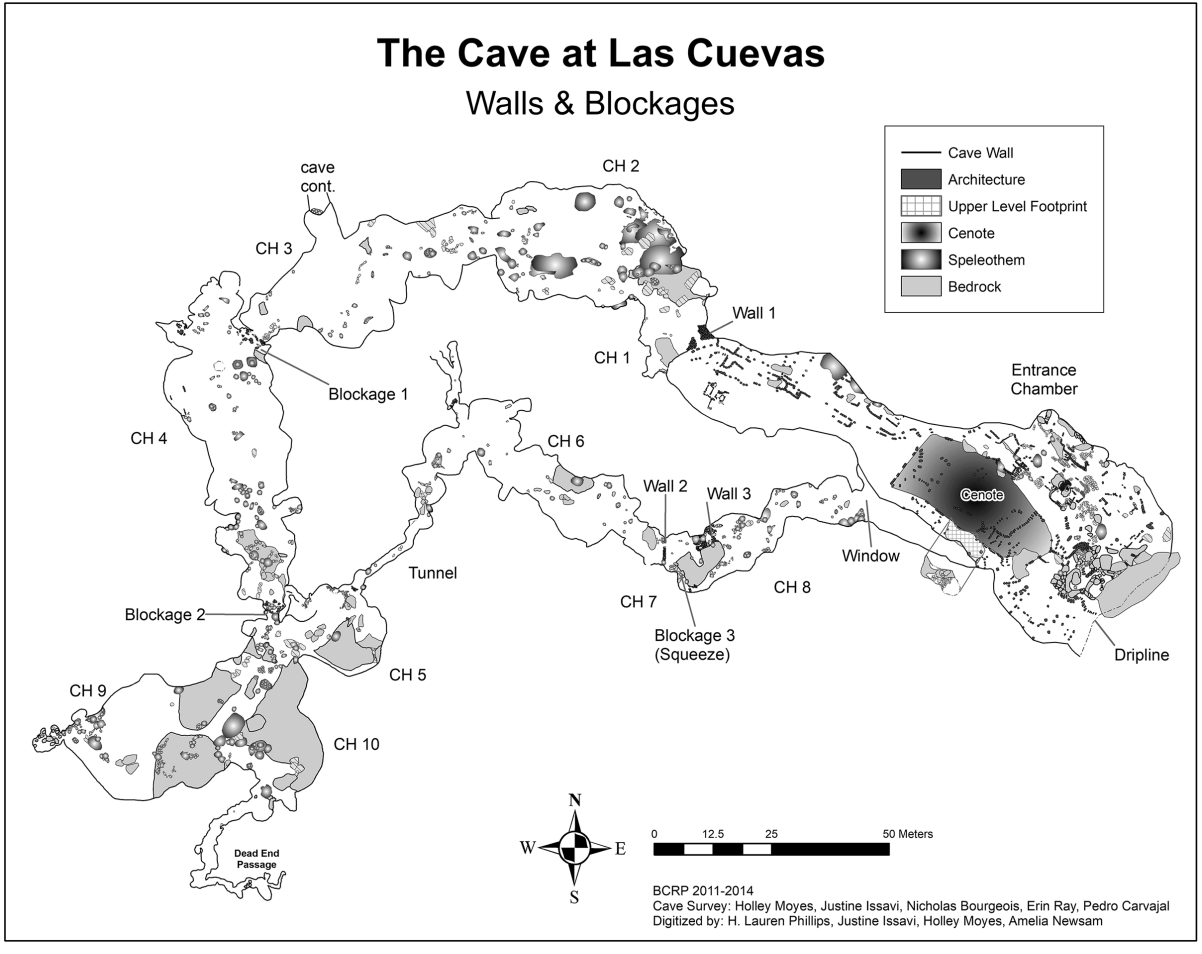

Figure 15.5. Map illustrating the blockages and walls in the Las Cuevas tunnel system (Courtesy of LCAR).

Las Cuevas in the Late Classic Period

Based on five field seasons of chronology building through excavation and test-pitting (Kosakowsky et al. 2013; Moyes et al. 2012; Moyes, Robinson, et al. 2015), both ceramic analyses and three accelerator mass spectrometry (AMS) dates from Temple 1 demonstrate that the surface site was constructed in the Late Classic period. The first AMS date from Floor 6, calibrated using OxCal 4.3 at the 2-sigma range, is CE 665–866, and there is an 87% probability that the date falls between CE 665 and 779. A date from the Plaza A floor abutting Temple 1 at the 2-sigma range calibrates to CE 665–776. A date from the marl deposit on Temple 1 that we suspect is a termination deposit dates at the 2-sigma range to between CE 730 and 951.

Ceramic analyses place all building phases at the site into the later part of the Late Classic period (Tepeu 2/Spanish Lookout), which agrees well with the AMS dates. Temple 1, the eastern structure of Plaza A, was constructed in four phases, all dating to this temporal period (Kosakowsky et al. 2013). A small ceramic deposit located below the platform upon which the ball court sits suggests that people were present in the area as early as the Late Preclassic (250 BCE–250 CE), although no formal constructions date to this earlier time. There is also no evidence of Preclassic use within the cave. Therefore, Las Cuevas appears to be an entirely Late Classic phenomenon. The data suggest that the Las Cuevas enterprise demonstrated a certain amount of success as the Late Classic period wore on. The site expanded, temples were raised to greater heights, and more platforms were gradually added in the cave's entrance to accommodate a larger number of participants. Yet, as the site expanded, the Maya world was crumbling.

The Late Classic period in the Maya Lowlands is parsed into two phases—the early Late Classic (600–700 CE), characterized by peak population growth, and the late part of the Late Classic (700–950 CE), a time of stress and political turmoil when polities begin to disintegrate and kingdoms were abandoned. For over 200 years, Mayanists have grappled with the causes of what is commonly referred to as the "Classic Maya Collapse," which has come to be regarded as a social transition distinguished by the decline of political complexity and change in the sociopolitical order (Rice et al. 2004:9). Over the years, numerous causes have been proposed, including catastrophic earthquakes, epidemic diseases, soil exhaustion, the revolt of the lower classes, and droughts. It is only recently that scientific evidence has demonstrated that, of these hypothesized events, droughts plaguing the region were the likely proximal cause that stimulated sociopolitical changes

(Ebert et al. 2014; Hoggarth et al. 2017; Kennett et al. 2012; Kennett and Hodell 2017), although it is worth noting that not all scholars agree with this conclusion (e.g., Chase and Chase, Chapter 16, this volume).

Derived from a speleothem record in southern Belize, the most accurate and precise climate data describes a 19-year drying period from 600–618 CE, followed by a 12-year drying period from 669 to 680 CE, and drought conditions that intensified between 790 and 896 CE (Hoggarth et al. 2017:108, Table 2, 109, Table 3). Dramatic climate change brought with it declines in agricultural productivity and, consequently, demographic change. Population decline in the region is apparent in the archaeological record, and models based on ethnohistoric data suggest that famine brought on by crop failure caused mortality rates and migration to increase, resulting in depopulation of the Southern Lowlands (Hoggarth et al. 2017).

We expect environmental catastrophe to produce social tensions, strife, and warfare. Synthesizer Jared Diamond (2005:516) vividly expresses these expectations: "When people are desperate, undernourished, and without hope they blame their governments, which they see as responsible for or unable to solve their problems. They try to emigrate at any cost. They fight each other over land. They kill each other. They start civil wars." Indeed, we can find examples of these sorts of responses in the archaeological record in Mesoamerica. For instance, Matthew Lachniet and Juan Pablo Bernal-Uruchurtu (2017) note that in central Mexico, an Epiclassic megadrought beginning in 550 CE and lasting until 850 CE coincided with the "Big Fire" and consequent decline of the Teotihuacan state as well as the rise of the fortified hilltop city of Xochicalco in the Morelos valley (Hirth 2000). Douglas Kennett and David Hoddel (2017) note population shifts, fractured political networks, and increased warfare coinciding with climatic drying throughout the Maya Lowlands in the Late Classic period, and Arlen Chase and his colleagues (1991) find an increased record of warfare imagery on pottery and monuments in the Southern Lowlands at this time.

Discussion and Conclusions

While there is plenty of additional evidence to demonstrate the presence of social strife among the Late Classic to Terminal Classic Lowland Maya, I contend that this is not the whole story. Ritual proceedings at Las Cuevas indicate that other, more positive responses also took place. From a Durkheimian perspective, the large public rites sponsored by Las Cuevas suggest there were movements afoot designed to quell tensions and promote

social solidarity. John Kantner and Kevin Vaughn (2012) have argued that pilgrimage centers arise in situations in which there is climatic unpredictability and religious leaders are thought to influence environmental, subsistence, or societal success. Las Cuevas may well have been such a place.

Pilgrimage at Las Cuevas may have been part of an overall trend toward religious revitalization in caves as part of what my colleagues and I have identified as the Late Classic Drought Cult (Moyes et al. 2009). Data collected from Chechem Ha cave in Belize (Moyes 2006a, 2006b) demonstrated that, although it had been used since the Early Preclassic period (1100 BC), the cave entrance was blocked off and reopened sometime after 680 CE. This was accompanied by a change in ritual practice that included the importation of large intact water and storage jars into the cave as offerings for rain deities as a likely ritual response to diminishing rainfall and crop failure. Data collected by the Belize Cave Research Project (Moyes et al. 2017) demonstrated that cave use increased dramatically (32% of the caves surveyed) at this time. Although some may argue that this expansion is a response to population growth, this would not account for changes in ritual practice that accompanied increased cave use.

Whatever the case, it is clear that the Maya people of the Eastern Lowlands put their faith in ritual—not just ritual conducted in communities and plazas but ritual that involved "capturing the forest" and the powers of the landscape at the heart of their cosmological beliefs. When we consider the importance of the sacred landscape, it is easy to understand that, when in crises, believers turned to their most sacred precincts. At Las Cuevas they created an organized performance space to ask for assistance and solace from the earth and indwelling deities. Although the region was eventually depopulated, this does not necessarily constitute a ritual "failure." While rites at Las Cuevas and elsewhere may not have produced the desired effects, people coming together for a common good may have experienced mutual benefits in reducing social conflict and promoting a more peaceful existence in difficult, stressful circumstances.

Acknowledgments

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grateful. Special thanks are extended to Josue Ramos for his assistance on the ground and in the air. Special thanks go to our local partners, Israel Canto, Saul Haines, Jaime Iglesias, Don Antonio Mai, Javier Mai, Carlos Mendez, and Gonzalo Pleitez. Thanks also to the many crew members who collaborated in this work, including Nicholas Bourgeois, Maureen Carpenter, Rafael Guerra, Shayna Hernandez, Justine Issavi, Shane Montgomery, Lauren Phillips, Laura Kosakowsky, Amy Newsome, Erin Ray, Mark Robinson, and Barbara Voorhies. Funding for the Las Cuevas project was generously provided by Alphawood Foundation, the Hellman Foundation, National Geographic Foundation, and the University of California, Merced.

16

Monumental Landscapes of the Maya

Cogitating on a Past Built Environment

ARLEN F. CHASE AND DIANE Z. CHASE

What makes a landscape monumental? While "monumental" might seem an odd term to join with "landscape," the conjunction is extremely apropos for the ancient Maya. Often taken to signify height, monumentality can also include mass, large area, or even sheer effort. As the chapters in this volume demonstrate, Maya landscapes were monumental because of the massive modifications made to the physical terrain, the large-scale building efforts that dotted the topography, and the myriad of ways in which the natural environments were engineered. By the Late Classic period most of the landscapes within Maya sites were infilled with and transformed by constructions. These efforts can be physically seen today upon the terrain surface in both Maya architecture and built subsistence systems, but they are also reflected in their art and iconography.

The monumentality of ancient Maya architecture is perhaps the easiest to comprehend. The large public architecture of the ancient Maya is visible today in the reconstructed ruins that are frequented by tourists as well as in the mounds of earth and rock that still remain to be excavated or stabilized. At a typical site, much of this architecture is spread over the landscape and arranged around a series of plazas. Among the things that impress modern visitors are the massiveness and sheer verticality of Maya pyramids and the vaulted stone roofs that cap many of their palaces and edifices. What is often not as easily comprehended is the fact that, at most sites, extensive bedding, leveling, and infilling occurred relative to the landscape in order to construct the plazas and buildings that make up the various phases of any given site. In fact, much of ancient monumentality is in the horizontal

transformation of a landscape. Temples only serve as projections capping a vast sea of long-term construction efforts.

Some of the monumentality of the landscape is visible directly in other specially constructed features. For instance, Tikal, Guatemala, is largely encircled by a ditch and wall that serves to proclaim the boundaries of that city (D. Webster et al. 2007). And, in the northern Petén, vast systems of intersite causeways serve to show the substantial effort expended in the integration of early polities in this portion of the Maya area. Apart from buildings, boundary walls, and roadways, other visible aspects of monumentality on the Maya landscape are the remains of extensive agricultural modifications to the terrain. The Late Classic Maya concern with ancient subsistence sustainability is evident in these agricultural constructions. These built features include raised fields in wetland areas (Adams 1980; Harrison 1977; Luzzadder-Beach et al. 2012), agricultural terracing in upland regions (Chase and Chase 1998a; Dunning and Beach 1994; Turner 1979), and walled gardens associated with house lots (Folan et al. 1983; Hare et al. 2014). The site of Edzna in Campeche also constructed a series of canals to control water (Matheny et al. 1983); these were presumably associated with raised field agriculture at that site. Given population projections for the Late Classic Maya Lowlands as having housed between 3 and 13 million inhabitants (Turner 1990:302 [Canuto et al. 2018 argue for between 7 and 11 million]), some of this agricultural focus, especially in peripheral areas, may have been done for economic profit, especially since major portions of the Maya region needed to import food (see Dahlin and Chase 2014:143,146,153 for Tikal and Calakmul; and Dahlin et al. 2005 for Chunchucmil).

Like any major civilization, the ancient Maya created anthropogenic landscapes. The reconstitution of the environments in which they lived occurred on a variety of timescales and with vast differences in terms of energy input; some of the landscapes were altered over long periods of time through accretive actions while other landscapes were rapidly changed. But no matter the time scale involved, the environment in which the Late Classic Maya lived was substantially manipulated, reconstituted, and managed. The ancient Maya did not shy away from transforming the world in which they lived. Their impact on the landscape that they occupied and utilized was all-encompassing and can still be seen today in canopy growth patterns that remain as ecofacts of human manipulation of species and the environment itself (e.g., Fedick 2003; Hightower et al. 2014).

Not only were residences and buildings constructed from materials

extracted from the local environments, but often the landscape was substantially terraformed both for agriculture and building materials and also to control the flow of water. Soft bedrock and harder stone were extracted for building materials, often moved some distance from where they were initially quarried. Similarly, Maya refuse was incorporated into the landscape, often at some distance from its place of origin (Chase and Chase 2015:19–20). In other cases, the landscape was denuded of soil and then built back up with the soil being placed behind stone agricultural terraces that were bedded directly on bedrock (Chase and Chase 1998a). Wetland agriculture created fertile land amid a grid of canals or raised fields (Dunning et al. 2002; Turner and Harrison 1983). While wetland agriculture was subject to the vagaries of excessive rainfall and flooding, agricultural terracing managed the flow of water over the landscape (Chase and Weishampel 2016) with the constructed features actually retaining water, determining seepage (to a large degree), and directing flow so as to mitigate erosion.

Maya worldview also speaks to the monumentality of the landscape and the Maya connection to it. This is seen allegorically in Maya iconography and directly in the Maya use of caves. Multiple layered worlds existed according to the ancient Maya; these are symbolically represented in their ritual deposits through the placement of items representing these distinct levels (e.g., D. Chase 1988; Chase and Chase 1998; Mathews and Garber 2004). We can glimpse other worlds in sacred places like caves, which served as portals to the underworld and locations for Maya religious ceremonies (Prufer and Brady 2005; see Moyes, Chapter 15, this volume). The multilayered monumentality of the Maya worldview is thus physically represented in the spatial and archaeological records at various scales and is also emphasized in repeated manifestations in the passageways of Maya time (D. Chase and A. Chase 2021).

Thus, there is no doubt that—while the descriptive term "monumentality" implies height, mass, labor, or extensiveness of features—the physical and symbolic landscapes that the Maya both created and used are properly termed "monumental." The remainder of this chapter explores the relationships that existed between ancient Maya monumentality and landscapes and how they changed through time.

Maya Worldview and Monumental Landscapes

Maya iconography is directly tied to their view of the ancient landscape and their overarching concern with sustainability. The Maya were dependent on

maize agriculture, and maize is amply recorded within their art (Chinchilla M. 2017; Stross 1994; Taube 1996). Their concern with water is depicted through their use of water lilies (Kettunen and Helmke 2013); water lilies only grow in potable water and, thus, serve to highlight Maya knowledge of this landscape association. Other parts of nature also serve to illustrate the relationship that the Maya had with the landscape and its importance in Maya worldview. For instance, crocodiles were interred in a series of deposits at Tikal in order to create a sacred landscape within Tikal's North Acropolis (Chase and Chase 1998:326), and the gridded city of Nix'tun Chich may have been modeled after the scales on a crocodile to emphasize its role as a sacred landscape (Rice 2018). Maya pyramids physically represent the landscape as mountains and are named as such in hieroglyphic texts. The hieroglyph for temple pyramid is *witz* (Schele and Mathews 1998), and it is associated with cosmological locations like Flower Mountain that figure prominently in Maya belief and cosmology (Taube 2004, 2013). Other Maya buildings were modeled into symbolic representations of cavernous earth-monsters emerging from the underworld (Pollock 1980). Finally, caves themselves were incorporated into the Maya monumental landscape as portals to the underworld (Bassie-Sweet 1996; Prufer and Brady 2005); this is evident in their use for rituals that were viewed as being physically carried out in the Maya underworld (Bassie-Sweet 1991).

In analyzing Maya landscapes, researchers have often focused on specific features as being important to the Maya. These features include mountains, hills, volcanoes, caves, and sometimes water (Brady and Ashmore 1999). Thus, often the natural landscape is viewed as being incorporated into the Maya built landscape (see also Demarest and colleagues, Chapter 12; and Woodfill and Wolf, Chapter 3, this volume). Realistically, many of these natural features—mountains, hills, and volcanoes—are more relevant to highland communities than to lowland communities because of the nature of the terrain. Whereas the Lowland Maya had to construct their own "mountains," in the highlands these features dot the landscape, leading various researchers to argue that entire sites were oriented to specific physical features like mountains (see Arroyo [2018:354–355] for the highland sites of Naranjo and Kaminaljuyu as well as Rosenswig and Mendelson [2016] for Izapa). The Lowland Maya appear to have been more focused on caves (see Demarest et al. [Chapter 12], Moyes [Chapter 15], and Woodfill and Wolf [Chapter 3], this volume), even placing some architectural constructions specifically above caves, as can be seen for the site of Las Cuevas in Belize (Moyes et al. 2012), at the Duende complex at Dos Pilas (Brady and

Veni 1992), and at the Temple of the High Priest at Chichen Itza (Thompson 1959:128). Additionally, some architectural constructions, specifically those seen in the Rio Bec area, serve as iconographic entrances to the underworld in that their doorways are modeled as the mouths of earth-monsters (e.g., Pollock 1980); entering the building was literally entering into the earth and, by extension, the underworld.

Water was key in settlement location and landscape (see Arroyo and Henderson, Chapter 7 this volume). The ancient Maya generally avoided situating their major Classic period settlements on bodies of water, possibly because of the underworld connotations of water and its association with death (D. Chase and A. Chase 1989). The association of water and death is specifically represented in the iconography at Tikal where the dead sank in a canoe beneath the water's surface (e.g., Moholy-Nagy 2008:Figs. 189–202). Thus, there were differences between the "watery" underworld and the more "solid" underworld, as represented by caves. Caves represented liminal space into which individuals could traverse and then return to the present surface world (e.g., D. Chase and A. Chase 2009).

Settlement Patterns and Remote Sensing

Long-running debates have ensued within the Maya area as to whether the Maya were urban and whether they engaged in city planning. Both of these questions were difficult to answer—even with extensive settlement-pattern work—because of the difficulty in documenting the full extent of occupation within a semitropical jungle canopy. If city planning was acknowledged, there was often a question over the scale of the planning and whether it was truly monumental. Initially, city plans were tied to Maya cosmology and sites were seen as being cosmologically oriented (implying planning; see Ashmore 1991; Ashmore and Sabloff 2002, 2003; Houk 2017; M. E. Smith 2003, 2005), but Maya city planning realistically went far beyond simple cosmological orientations. Settlement-pattern study and advances in remote sensing, particularly related to lidar, have been able to establish that the ancient Maya were clearly urban and did engage in city planning (Chase and Chase 2007a; Chase and Chase 2017; Chase et al. 1990; Houk 2015; Hutson 2016). However, one must keep in mind that all cities were the result of a process that included both premeditated and spontaneous elements (e.g., Kostof 1991:41).

Settlement-pattern research first documented that Maya residential groups were dispersed and appeared to sprawl over their landscapes. Some

of the earliest extensive mapping was undertaken at the sites of Dzibilchaltun, Mexico (Stuart 1979), Coba, Mexico (Folan et al. 1983), and Tikal, Guatemala (Carr and Hazard 1961), soon followed by extensive work at Calakmul, Mexico (Folan et al. 2001), and Caracol, Belize (A. Chase 1988; Chase and Chase 2001; A. Chase et al. 2011). As this initial settlement work was carried out prior to the advent of lidar, this work was tedious, time-consuming, and done on the ground through great effort. Almost 9,000 structures were revealed in 18 square kilometers at Dzibilchaltun, indicating a population with diverse social statuses (Kurjack 1974). At Tikal, 23 square kilometers were mapped, revealing a population estimated at between 60,000 and 90,000 people (Culbert et al. 1990). Thirty square kilometers were mapped at Calakmul, with a population estimated at 60,000 people (Folan et al. 2001). Twenty-three square kilometers were also mapped at Caracol, which had an estimated population of over 100,000 people (Chase and Chase 1994; A. Chase et al. 2011). More recently, on-the-ground coverage at Chunchucmil, Mexico, almost completely mapped the site (Hutson 2017; Hutson et al. 2008); its population was estimated at 42,000 people at its height (Hutson 2016), meaning that food would have needed to be imported to feed the city's population (Dahlin et al. 2005).

What all of this settlement work has also demonstrated is that the various Maya populations that lived in these ancient centers were closely tied to a variety of agricultural systems (Chase and Chase 2016a). In the Southern Maya Lowlands, there was open space between living groups at sites like Tikal that could have been used for gardens and crops; at Tikal, more intensive farming also occurred along the edges of *bajos* (Lentz et al. 2015). At some sites like Caracol the open spaces between residential groups were clearly used for agriculture, and this was explicitly reflected in the construction of terraces that completely transformed the landscape (Chase and Chase 1998a). A second pattern in the Northern Maya Lowlands saw a denser residential settlement with house lots demarcated by walled areas that were not large enough for sustainable agriculture (see Garduno [1979] for Coba; Hutson et al. [2008] for Chunchucmil), indicating that agricultural fields must have existed outside the urban area (Chase and Chase 2016a; Dahlin et al. 2005). Yet the density of residential settlement at sites throughout the lowlands clearly indicates that the ancient Maya were urban (e.g., Chase et al. 1990; Houk 2015; Hutson 2016). More recent lidar work confirms this (Canuto et al. 2018; A. Chase et al. 2011; Chase, Chase, et al. 2014) but also demonstrates the need for extensive archaeological research in order to better interpret the distribution of settlements across the landscape.

The most recent approach to understanding the monumentality of Maya landscapes has been to employ remote sensing. Perhaps the most spectacular results regarding an understanding of Maya landscapes have been gained from the use of airborne lidar; lidar uses laser beams to penetrate overlaying tree canopy and provide detailed point data of the actual terrain (see A.S.Z. Chase et al. 2017; see Harrison-Buck and colleagues, Chapter 5, this volume, for an example of using drones and photogrammetry to map a denuded landscape with comparable results). The use of airborne lidar over large parts of the Maya area was pioneered at Caracol, Belize. The initial lidar campaign was flown in 2009 and covered an area of 200 square kilometers (Chase et al. 2010; A Chase et al. 2011; D. Chase et al. 2011), firmly demonstrating how large Maya cities were and recording almost 160 square kilometers of continuous agricultural terraces that showed how Caracol's population was able to sustain itself. A second lidar campaign in 2013 was organized by a consortium of archaeologists working in western Belize and was funded by the Alphawood Foundation; this campaign covered an additional 1,050 square kilometers (Chase, Chase, Awe . . . and Brown 2014; Chase, Chase, Awe . . . and Fernandez Diaz 2014), permitting the definition of Caracol's eastern border (as well as the area to the south, including the site of Las Cuevas), the entire west-central border region of Belize (locating several new sites), and the entire archaeological landscape of the Belize Valley (including a strip through El Pilar). The use of this technology enabled a complete view of the ancient Maya landscape and finally permitted an assessment of its monumentality that was not based only on limited mapped samples of public architecture and settlement.

Since the initial use of lidar at Caracol to penetrate jungle canopy over a large region, Mesoamerican archaeology has been revolutionized by the use of this technology, most recently by a large program in the northern Petén of Guatemala that is causing archaeologists working there to reassess their views of ancient Maya complexity (Canuto et al. 2018). In terms of understanding landscapes (Chase and Chase 2016b; Chase et al. 2012, 2016; Chase and Chase 2017), lidar has been used to detect features like caves (Weishampel et al. 2010), constructed reservoirs (Chase 2016a), and water flow (Chase and Weishampel 2016). Lidar has now been used extensively in southern Belize (e.g., Prufer et al. 2015), throughout Mexico (e.g., Hare et al. 2014; Loughlin et al. 2016; Reese-Taylor et al. 2016; Rosenswig et al. 2013), and in Guatemala (e.g., Canuto et al. 2018; Inomata et al. 2017). The presentation of the Caracol lidar data in India (Weishampel et al. 2010) also led to the successful large-scale use of lidar at Angkor in southeast Asia

(Evans et al. 2013). Thus, the use of lidar has forever altered and amplified our view of how humans modified and used ancient landscapes. Analysis of these landscapes shows the massive efforts that went into their modification, the enormous amount of settlement and architectural construction located on them, and the size and extent of these endeavors (Chase, Lucero, et al. 2014). Caracol is a particularly good example of this effort in that the site covers more than 200 square kilometers and is completely covered with settlement, agricultural terraces, and integrative public architecture and causeways.

Maya City Planning

One approach to the Maya constructed landscape has been the search for specific astronomical or geometric patterning within cities. The arrangement of a western pyramid and an eastern platform supporting three buildings on a public plaza was correlated with horizon-based astronomical observations at Uaxactun, Guatemala (Ricketson and Ricketson 1937); these "E-Groups" (named after the originally investigated Uaxactun plaza) were recognized at many Maya sites, leading researchers to look for other astronomical orientations in Maya sites (e.g., Sprajc 2015). Rather than focusing on astronomy, Peter Harrison (1989, 1999:187–191) argued that important Maya buildings at Tikal were situated relative to each other in terms of right triangles; each corner of the right triangle was situated on an important building axis. In this way, he was able to relate the various building groups at Tikal geometrically to each other, to argue for city planning at the site, and to ascribe specific building patterns to individual Tikal rulers. James Doyle (2013, 2017b:274) has also searched for geometric patterns in the size of early plaza areas and their distance from each other, while Francisco Estrada-Belli (2017) has demonstrated geometric replication of specific angles within secondary E-Groups associated with an early political sphere dominated by the site of Cival, Guatemala. While variations in site orientation over time may not have been present at all Maya sites, whether the ancient Maya consciously used astronomy and geometry in their placement of buildings within a general city plan is an open question.

Some of the earliest replicated monumental architecture placed on the Maya landscape is in evidence by the Middle Preclassic period in two very different architectural forms. E-Groups (defined above) have been long recognized as being among the earliest community architecture built by the ancient Maya (Chase and Chase 1995; Freidel et al. 2017; Inomata et al.

2013). However, the Maya also appear to have experimented relatively early with gridded cities (e.g., Pugh and Rice 2017), subsequently abandoning them for more dispersed settlements. Both suggest monumental effort in planning, and each may be tied to Maya cosmology and worldview.

The existence of early Maya gridded cities has only been recognized within the last several years, and exactly how and why they exist are unanswered questions. The initial one that was recognized and dated is laid out on an orthogonal grid on the Candelaria Peninsula in western Lake Petén Itza, Guatemala. Archaeological excavations at Nix'tun Chich have shown that this urban plan was in existence in the Middle Preclassic period prior to 500 BCE (Pugh and Rice 2017) and that it predates the better-known gridded city of Teotihuacan in central Mexico by half a millennium. Lidar has also revealed the existence of other early gridded centers at the Guatemalan site of Cival (Estrada-Belli 2017) and in the lower Usumacinta area of Mexico (Inomata et al. 2021); it is suspected that still others will be found and identified as more remote sensing is done (and if the earlier plans have not been obliterated by later construction efforts). What is interesting is that Nix'tun Chich, Cival, and the Mexican examples have an E-Group in their epicentral cores, clearly identifying these sites as within the broader Maya architectural tradition.

As monumental complexes that were replicated across the Maya Lowlands, E-Groups likely constituted the initial constructed foci for Maya communities (for related discussions, see Brown and Yaeger, Chapter 14; and Powis and colleagues, Chapter 13, this volume). E-Groups have been noted in the Maya area as an architectural form since the 1920s (Ricketson 1928), when the Uaxactun namesake group was identified as being a horizon-based observatory likely associated with the Maya agricultural cycle. While having roots in the Late Preclassic period, the Uaxactun E-Group dated predominantly to the Early Classic period. The form of Early Classic E-Groups was even more standardized than earlier Preclassic complexes; the Early Classic version exhibited both a high western pyramid and an eastern platform that was roughly 70 m in length (Chase and Chase 1995, 2017b). Excavations at the site of Cenote in the central Petén, however, also led to the definition of an earlier variant of this architectural form that apparently dated to the Middle Preclassic period. This form exhibited more variability but exhibited an eastern platform that could be over 130 m in length; the beginning versions of these Cenote-style E-Groups often initially involved the modification of bedrock into architectural form (Chase 1983, 1985), something now recognized at other sites (Inomata, Pinzón,

Palomo, et al. 2017). The early dating of the "Cenote-style" E-Group was subsequently confirmed by excavations in the northern part of the Petén (Hansen 1992). We now know that E-Groups were a prevalent architectural form in the Middle and Late Preclassic periods that formed the original monumental complexes for many Maya settlements (Chase and Chase 2017b; Freidel et al. 2017). It should be noted, however, that architectural construction surely predated these E-Groups and involved the infilling and leveling of large expanses of landscape (see Powis and colleagues, Chapter 13, this volume). Rosemary Joyce (2004) has argued that the earliest Maya did not build up but rather out—laterally, in the form of plazas and platforms that constituted massive construction efforts.

The earliest E-Group in the Maya area has been identified and securely dated to ca. 950 BCE at the site of Ceibal, and both excavations and lidar at this site confirm the massive effort that went into producing large flat architectural expanses (Inomata, Pinzón, Palomo, et al. 2017; Inomata et al. 2013, 2019). The form of the Maya E-Group may be potentially linked to other architectural prototypes that were found in Chiapas and the Gulf Coast (Lowe 1977). The fact that Olmec-style caches have been found in the Ceibal E-Group (Inomata, Pinzón, Palomo, et al. 2017; Inomata and Triadan 2016) also opens up questions of contact between the Olmec and the Maya. Takeshi Inomata is currently searching for earlier interlinking architectural forms in the low-lying plains of Tabasco; some of the early constructed forms that he has found are massive and evince gridded aspects related to causeways and water. Thus, the Maya focus on landscape monumentality has deep roots.

That the Maya practiced city planning (e.g., Smith 2007) is certain. Cities like Nix'tun Chich were planned as early as the Middle Preclassic (Pugh and Rice 2017); whether the gridding at the site was purposefully planned to symbolically represent the scales on a crocodile (Rice 2018) is probably an overstatement of Maya cosmography. The use of E-Groups at most early centers in the Maya Lowlands is also an example of city planning—and by the Late Preclassic period this architectural form came to specify a Maya identity (Chase and Chase 1995, 2017b, 2019a). Subsequently, many Maya centers focused on different building types that were common to most sites but arranged in different ways. During the Classic period, most Maya sites incorporated temples, palaces, ball courts, large plazas, and causeways into their central architecture (Andrews 1975). How these constructions were spatially organized differs at most sites; the components at each site were

similar, but the linkages and scales were variable (see Houk 2015). Some sites, like Tikal, used shorter and broader causeways to link temples with epicentral architecture; other sites, like Caracol and Coba, used causeways as integrative mechanisms (Chase and Chase 2003). The monumentality of certain constructions, particularly in relation to palaces, also can be taken as indicative of the power of the individual ruler at each site. Yet not all planning was top-down, particularly at the interface between community organization at the periphery and the urban landscape of the site core; Melissa Burham and colleagues (Chapter 4, this volume) make a compelling case for generative, or bottom-up, urban planning of outlying minor temples at Late Preclassic Ceibal.

Besides palaces, temples, ball courts, and public plazas and buildings, by the Late Classic period it is also likely that most Maya sites had formal marketplaces (e.g., King 2015). These markets took two different forms; in one form, a centrally constructed vaulted building housed the marketplace (e.g., Tikal; Jones 2015); in the other form, marketplaces were placed in open plaza spaces that were sometimes associated with low-range structures (e.g., Caracol; Chase and Chase 2001). In some cases, a single market plaza exists in the center of the site (e.g., Chunchucmil; Hutson 2016), while in other cities multiple plazas were placed throughout the extended landscape (see Chase et al. [2015]; see also Folan et al. [1983] for Coba). At Caracol, Belize, the city planning involved in the placement of these market plazas is in evidence both in the site layout and in the site's interlinking road system (Chase 2016b; Chase and Chase 2014a).

In past assessments of Maya centers (e.g., Ashmore 1981; Becker 1979), the interlinkage of ancient Maya settlement, agriculture, and landscape led to questions about whether the Maya were urban. The form of a Maya city differs from Western preconceptions of urbanism. In the Old World, many cities consisted of tightly spaced quarters separated by narrow streets (e.g., Smith 2007); they were often walled for protection, and their population density was far greater than that found in the Maya area. Whereas agricultural pursuits were removed from Western cities, in the Maya area agriculture was conjoined with urban space. This conjunction took the form of both gardens and more extensive agriculture, but it meant that Maya cities were more dispersed over the landscape than their Western counterparts. As noted above, the Maya living in the Northern Maya Lowlands focused on gardens and walled house plots, while their counterparts in the Southern Maya Lowlands employed truly sustainable agriculture within urban

limits; thus, cities in the Northern Lowlands evince a denser settlement compared to those in the Southern Lowlands (Chase and Chase 2016a). Yet, at over 1,000 people per square mile (Chase and Chase 2016b; D. Chase et al. 2011), there is no doubt that the Southern Lowland cities were urban.

Roland Fletcher (1995, 2009) first defined a form of low-density agricultural urbanism for southeast Asia that he felt could be extended to the Maya region and to other tropical areas. His type-city of Angkor in Cambodia practiced rice cultivation and extended over approximately 1,000 square kilometers (Evans et al. 2007). Thus, a Maya city of 200 square kilometers, like Caracol and its agricultural terraces, can be considered to securely lie within the purview of low-density agricultural urbanism (e.g., Isendahl and Smith 2013). Probably more so than Western cities, the sprawl and agriculture exhibited in low-density urbanism are also responsible for more extensive and expansive landscape modifications. The Maya conjunction of low-density urbanism and agriculture truly resulted in an anthropogenic environment on a monumental scale (Chase and Chase 2016b).

The Postclassic Reorganization of Space

Postclassic Maya peoples did not focus as much on terraforming their landscapes as had their predecessors. Instead, there was a change in emphasis in terms of how they treated monumentality. Sites were not as large as they previously had been, and neither were constructions as tall. While the Maya built both permanent and impermanent structures during all time periods, Postclassic period constructions saw a diminished focus on mass and a greater focus on surface veneer. They were hastily put together, often consisting only of base walls that were surmounted by a structure made from perishable materials. However, there was a lavish use of plaster to cover many of these edifices and mask their impermanence. Thus, these later buildings fell apart quickly when exposed to the tropical elements, while the earlier, better-built constructions weathered the passage of time with greater grace. This disparity is partially responsible for the mistaken belief that Postclassic peoples represented a "culturally reduced" reconstitution of the Classic period (Chase and Chase 2004b).

By the end of the Classic period, the majority of the usable Maya landscape had been infilled by residential settlement and agricultural plots amid the many city centers. All of these constructions involved modification of the landscape and the conscious reorganization of space. Yet this monumental landscape was then abandoned by the beginning of the tenth

century, and most of the terrain eventually reverted to forest. Interestingly, unlike most collapses, there was never a complete recovery in the Maya area; Postclassic population levels never returned to those seen in the Classic period (Turner 2018). Only with the advent of modern populations is the landscape once again starting to be both denuded of trees and infilled with people (see Prufer and Kennett, Chapter 2, this volume, for a discussion of long-term patterns of human–land interaction in southern Belize).

With the Maya collapse in the interior of the Yucatan Peninsula, the remnant Maya populations also appear to have moved to areas with bodies of water and especially to the eastern seacoast. The positioning of populations along waterways and seacoasts was likely an economic decision. Long-distance trade had always been important to the Maya (e.g., Lee and Navarrete 1978), but during the Postclassic period the remnant Maya participated in a global economy in which people and trade goods freely moved from northern Mesoamerica, Oaxaca, and the Pacific Coast back and forth with the Maya area. Based on the location of Postclassic cities, like Santa Rita Corozal, Belize (Chase and Chase 1988), and Tulum, Mexico (Lothrop 1924), this trade was both by river and especially by sea. Chichen Itza in the Northern Maya Lowlands had its own seaport at Isla Cerritos at the time of the Maya collapse (Andrews et al. 1988), and it is likely that the later Postclassic capital of Mayapan, Mexico, also had its own seaport, possibly at Isla Jaina (Inurreta D. and Cobos 2003). The emphasis on and importance of the sea to the Postclassic Maya can also be seen in all of the small shrine structures that line the eastern seacoast of the Yucatan Peninsula (Andrews and Andrews 1975; Lothrop 1924).

Postclassic Maya centers differed from earlier Maya cities. They were generally smaller and more compact, even though dispersed settlement was still common (e.g., for Mayapan, see Hare et al. 2014; Masson and Peraza L. 2014; Pollock et al. 1963). Some of these centers in the Northern Lowlands were walled (Mayapan, Tulum, Xcaret), and other Postclassic centers were protectively located on islands (Chase 1976; Johnson 1985; Sabloff and Rathje 1975), sometimes with extensive dispersed settlement on the shores of lakes (Chase 1990); these settlement locations and constructions are suggestive of a heightened level of conflict—as well as of a dependence on water transport. Yet, unwalled Postclassic cities also existed in the Southern Lowlands (e.g. Santa Rita, Corozal [Chase and Chase 1988] and Lamanai, Belize [Pendergast 1981, 1985]), suggesting some continuity with Classic period patterns. Unlike the Classic period, however, the Postclassic impact on the general landscape was minimal, especially in the Maya Southern

Lowlands. Whether conflict or other factors inhibited late Maya population growth, it is clear that Postclassic population levels never reached Classic levels, suggesting that conditions were not right for a full-scale recovery of the older status quo and the monumental aspects of the Maya past.

Conclusion

Maya landscapes were monumental, as can be seen in their buildings and architectural engineering, settlements and road systems, and population levels. The Maya view of the world was also monumental; portals between the underworld and present world were physically represented in building iconography and caves; associated ritual emphasized connections across time. However, Maya monumentality and settlement changed over time. While many of the aspects of Lowland Maya civilization remained constant over the long run, others changed dramatically. Architectural mass and landscape modifications increased over the course of the Classic period and then decreased across much of the lowlands during the Postclassic period. Site sizes also rose and fell; however, population density in Maya settlements also increased over time (even if vast spaces of the lowlands were not occupied). Whether concrete or abstract, archaeological data (collected via excavation, survey, and new interpretive tools) provides perhaps the best indicator of the relationships that existed between ancient Maya monumentality and landscapes by providing us with the ability to view past cities, peoples, and lifeways.

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